

STATE OF NEW HAMPSHIRE

**Impairments Removed (i.e. Delisted)
from the 2018 303(d) List
of Threatened or Impaired Waters
(i.e. Category 5)**

January 3, 2020



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**STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
29 HAZEN DRIVE
CONCORD, N.H. 03301**

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January 3, 2020

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Introduction

In accordance with Section 303(d) of the federal Clean Water Act, States must prepare a list of impaired waters that require a Total Maximum Daily Load study every two years (i.e., the 303(d) List). The last approved 303(d) List was prepared by the New Hampshire Department of Environmental Services (NHDES) in 2012. The State's final 2014 and 2016 Section 303(d) Lists of impaired waters were submitted to the US Environmental Protection Agency (USEPA) on March 27, 2017, and November 30, 2017, respectively. The USEPA issued partial approvals of the 2014 and 2016 Lists on March 16, 2018, and June 22, 2018, respectively. The 2014 partial approval covered all fresh waters and some estuarine waters, with the exception of Little Bay, the Bellamy River, the Cocheco River, the Upper Piscataqua River, Portsmouth Harbor, Little Harbor/Back Channel, Great Bay and Upper Portsmouth Harbor. The partial approval of the 2016 List had deferment of nearly the same list of waterbodies with one exception. The Cocheco River was included in the approved portion of the 2016 303(d) List. Due to the complexity of the assessment issues involved, the USEPA deferred action on the State's list with respect to the aforementioned waterbodies until a later date when its review has been completed. Downloadable copies of the past lists as well as the draft 303(d) 2018 list are available on the NHDES website for review (<http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm>). This document provides a list of all surface waters and parameter combinations that were removed from categories 4A, 4B, or 4C impairments on the 2018 305(b) and the reasons why they were removed.

Assessment outcomes cover a spectrum from very good to very bad coded as an alpha numeric scale that provides additional distinctions in cases where an impairment exists. In each of the new impairments detailed within this document the 2016 and 2018 assessment status is highlighted applying the categories in the table below.

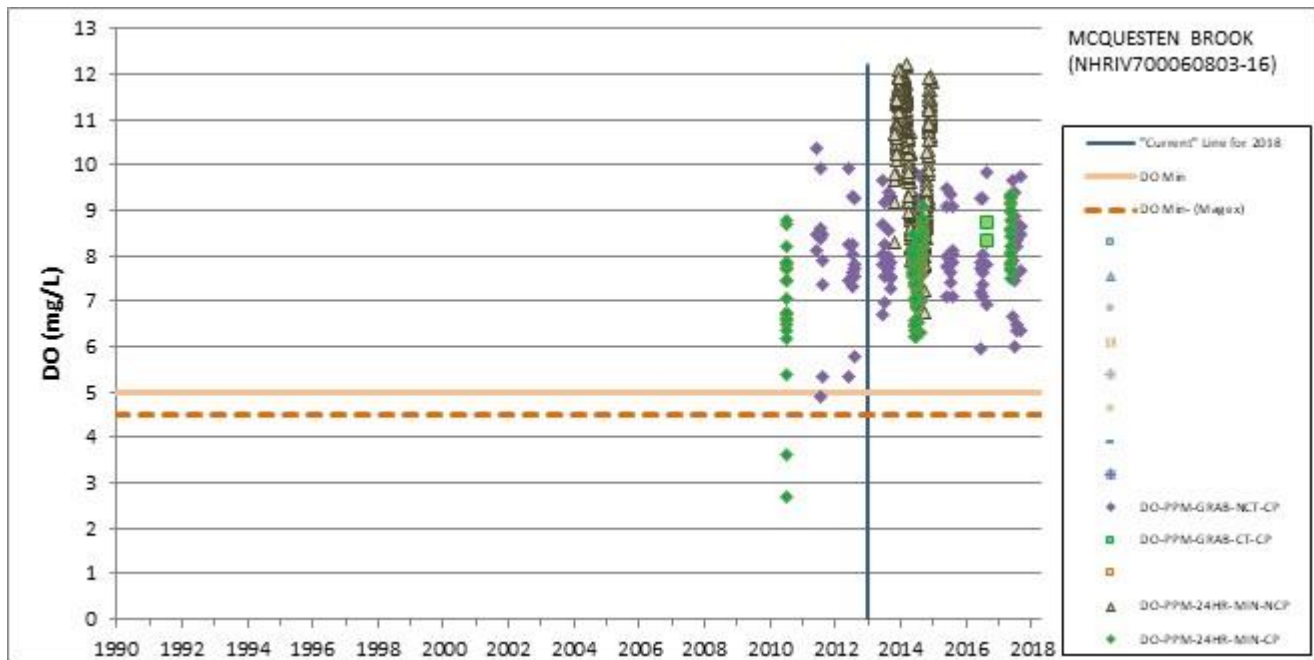
		Severe	Poor	Likely Bad	No Data	Likely Good	Marginal	Good
		Not Supporting, Severe	Not Supporting, Marginal	Insufficient Information – Potentially Not Supporting	No Data	Insufficient Information – Potentially Full Supporting	Full Support, Marginal	Full Support, Good
CATEGORY	Description							
Category 2	Meets standards						2-M or 2-OBS	2-G
Category 3	Insufficient Information			3-PNS	3-ND	3-PAS		
Category 4	Does not Meet Standards;							
4A	TMDL Completed	4A-P	4A-M or 4A-T					
4B	Other enforceable measure will correct the issue.	4B-P	4B-M or 4B-T					
4C	Non-pollutant (i.e. exotic weeds)	4C-P	4C-M					
Category 5	TMDL Needed	5-P	5-M or 5-T					

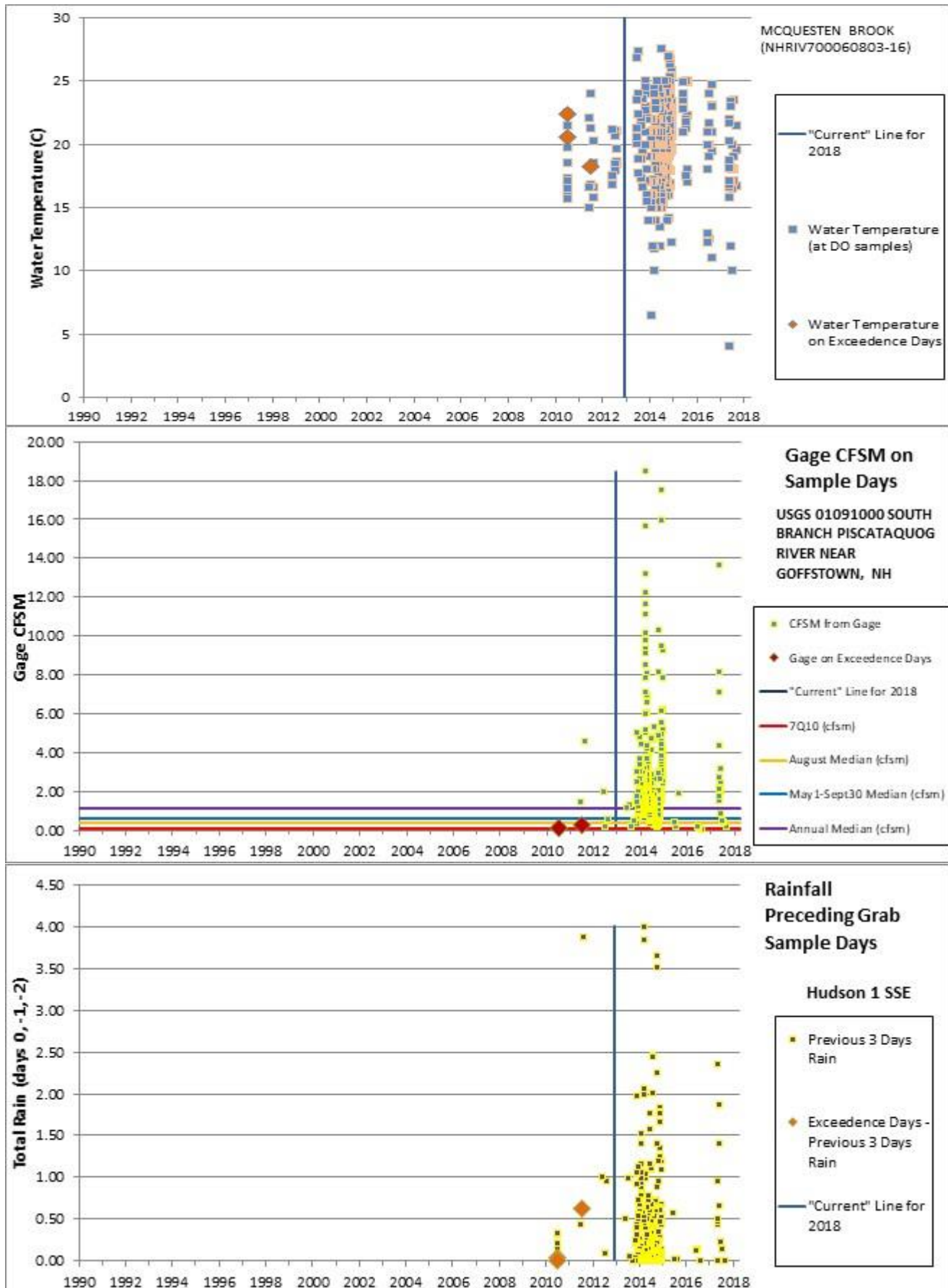
Dissolved Oxygen for Aquatic Life Integrity

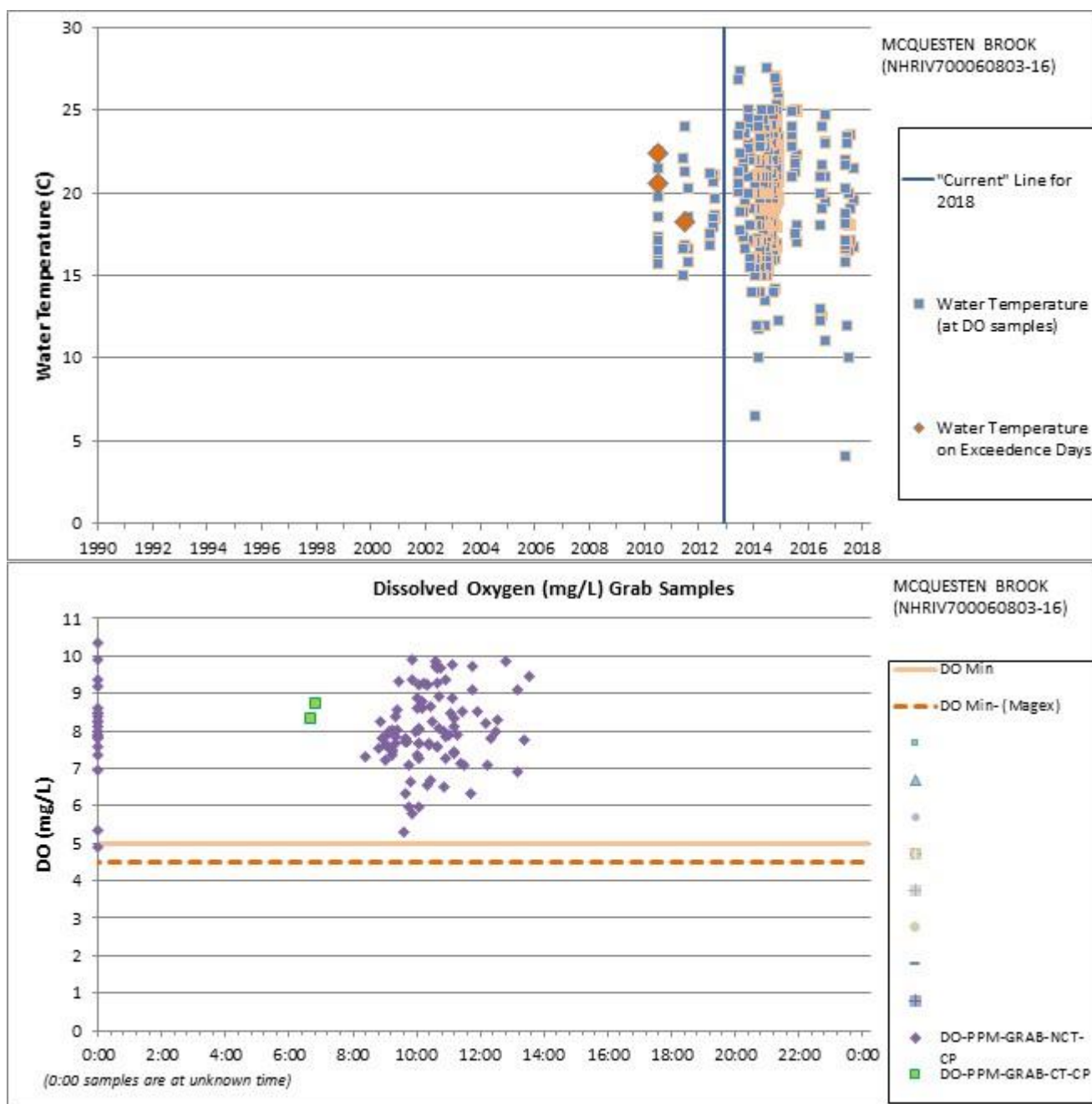
McQUESTEN BROOK (NHRIV700060803-16)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
McQUESTEN BROOK	NHRIV700060803-16	Oxygen, Dissolved	BEDFORD, MANCHESTER	5-P	2-G

All of the grab samples and daily minimum logger values (n=526) collected during the current assessment period (2013-2018) were above the dissolved oxygen threshold of 5.0 mg/L. Grab samples and datalogger data was collected at stations 01-MQB, 02-MQB, 03-MQB, 03D-MQB, 04A-MQB, and 05-MQB at a wide range of temperatures 4.1-27.6 degrees C, flows ranging from 0.08 to 18.46 cfs, and 3-day rainfall totals from 0.00 to 4.01 inches. The high dissolved oxygen samples were collected during a wide range of times: during critical period, critical time, and noncritical period and noncritical time. The New Hampshire Rivers Council, NHDES, New Hampshire Fish and Game, and the Samuel P. Hunt Foundation have been working with the City of Manchester, the Town of Bedford, and other groups to protect and improve the McQuesten Brook watershed since roughly 2011. As part of these efforts four dams, one stream obstruction, and two culverts were removed in 2016. Sampling at the aforementioned sites has been conducted throughout the restoration activates, and prior to and following the dam removals and culvert replacements. It is evident that the restoration efforts outline in the McQuesten Brook Geomorphic Assessment and Watershed Restoration Plan (<https://www.nhrivers.org/documents/nhrc.mcq.plan.pdf>) have contributed to improvements in water quality. As a result, McQuesten Brook (NHRIV700060803-16) has been moved from 5-P to 2-G for dissolved oxygen for the aquatic life integrity designated use based on data collected in the current assessment period.







MITIGATION WETLAND (NHLAK600030708-03)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
MITIGATION WETLAND	NHLAK600030708-03	Oxygen, Dissolved	EPPING, BRENTWOOD	5-M	3-ND
		Dissolved oxygen saturation	EPPING, BRENTWOOD	5-M	3-ND

This waterbody was mistakenly impaired for dissolved oxygen and dissolved oxygen saturation in 2010 based on data collected below the top 25% of the water column in an unstratified waterbody. The samples evaluated were collected at a depth of 1.5 meters, with a max depth of 2 meters at the station. Per the CALM, in unstratified waters these data are generally not used to make a final assessment determination. Since the original impairments were made, NHDES has implemented additional QA/QC checks to identify samples taken below the top 25% of the water column based on the

maximum depth at a sampling location. Samples taken within the top 25% of the water column were at or above the water quality threshold, but there were insufficient samples (n<10) to make a full assessment determination at the time. Therefore, the waterbody would have been placed in category 3 at the time. Further, the only available data is greater than 10 years old. Because the overly deep samples were the basis for the original impairments, and there is no current data available, NHDES has delisted the Mitigation Wetland (NHLAK600030708-03) for dissolved oxygen concentration and saturation for the aquatic life designated use and as there is no current data to make an assessment it has been placed in category 3-ND for the 2018 cycle.

BEACHES ORIGINALLY IMPAIRED BECAUSE OF DATA COLLECTED ON THE PARENT WATERBODY

In the past, beaches (a.k.a. the child) inherited the aquatic life integrity assessments of the lake (a.k.a. the parent) they resided upon regardless of aquatic life integrity data collection within the beach assessment unit. Realizing that this generated redundancy in the database that did not help in the management of the lake water quality and created a certain level of confusion with the public, this practice ceased in the 2010 assessment cycle. However, not all of the disconnected aquatic life integrity assessments of the children (beaches) were caught at that time. In keeping with the current approach, the following waterbodies have been moved to 3-ND (no current data) for dissolved oxygen saturation for the aquatic life integrity designated use. This move of the child beach does not impact the assessment of parent lake assessment unit.

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
BEAVER LAKE - GALLIEN'S BEACH	NHLAK700061203-02-02	Dissolved oxygen saturation	DERRY	5-M	3-ND
BEAVER LAKE - PARK BEACH	NHLAK700061203-02-03	Dissolved oxygen saturation	DERRY	5-M	3-ND
CAPTAIN POND - CAMP Y WOOD BEACH	NHLAK700061102-03-04	Dissolved oxygen saturation	SALEM	5-M	3-ND
CAPTAIN POND - CAMP OTTER SWIM AREA BEACH	NHLAK700061102-03-03	Dissolved oxygen saturation	SALEM	5-M	3-ND
BEAVER LAKE - COMEAU'S BEACH	NHLAK700061203-02-04	Dissolved oxygen saturation	DERRY	5-M	3-ND
CRYSTAL LAKE-TOWN BEACH	NHLAK700060703-02-02	Dissolved oxygen saturation	MANCHESTER	5-M	3-ND
CRYSTAL LAKE - MELODY PINES DAY CAMP BEACH	NHLAK700060703-02-03	Dissolved oxygen saturation	MANCHESTER	5-M	3-ND
CAPTAIN POND - CAPTAIN'S BEACH	NHLAK700061102-03-02	Dissolved oxygen saturation	SALEM	5-M	3-ND
		Oxygen, Dissolved	SALEM	5-M	3-ND
RAINBOW LAKE - KAREN-GENA BEACH	NHLAK700061203-05-02	Dissolved oxygen saturation	DERRY	5-M	3-ND
		Oxygen, Dissolved	DERRY	5-M	3-ND
SUNAPEE LAKE - BLODGETT'S LANDING BEACH	NHLAK801060402-05-04	Dissolved oxygen saturation	NEWBURY	5-M	3-ND
		Oxygen, Dissolved	NEWBURY	5-M	3-ND
SUNAPEE LAKE - SUNAPEE STATE PARK BEACH	NHLAK801060402-05-05	Dissolved oxygen saturation	NEWBURY	5-M	3-ND
		Oxygen, Dissolved	NEWBURY	5-M	3-ND

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Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
SUNAPEE LAKE - DEPOT BEACH	NHLAK801060402-05-06	Dissolved oxygen saturation	NEWBURY	5-M	3-ND
		Oxygen, Dissolved	NEWBURY	5-M	3-ND
SUNAPEE LAKE - GEORGES MILL TOWN BEACH	NHLAK801060402-05-02	Dissolved oxygen saturation	SUNAPEE	5-M	3-ND
		Oxygen, Dissolved	SUNAPEE	5-M	3-ND
ONWAY LAKE - RAYMOND TOWN BEACH	NHLAK600030703-03-02	Dissolved oxygen saturation	RAYMOND	5-M	3-ND
ONWAY LAKE - CAMP ONWAY BEACH	NHLAK600030703-03-03	Dissolved oxygen saturation	RAYMOND	5-M	3-ND
ISLAND POND - PUBLIC BEACH	NHLAK700030202-02-02	Dissolved oxygen saturation	STODDARD	5-M	3-ND
COBBETTS POND - TOWN BEACH	NHLAK700061204-01-03	Dissolved oxygen saturation	WINDHAM	5-M	3-ND
KEZAR LAKE - WADLEIGH STATE PARK BEACH	NHLAK700030303-03-02	Dissolved oxygen saturation	SUTTON	5-M	3-ND
COBBETTS POND - DUNKAN BEACH	NHLAK700061204-01-04	Dissolved oxygen saturation	WINDHAM	5-M	3-ND
LAKE MASSASECUM - CAMP PIESAULE BEACH	NHLAK700030302-04-04	Dissolved oxygen saturation	BRADFORD	5-M	3-ND
GREAT POND - KINGSTON STATE PARK BEACH	NHLAK700061403-06-02	Dissolved oxygen saturation	KINGSTON	5-M	3-ND
LAKE MASSASECUM - MASSASECUM CASINO BEACH	NHLAK700030302-04-02	Dissolved oxygen saturation	BRADFORD	5-M	3-ND
GREAT POND - CAMP LINCOLN BEACH	NHLAK700061403-06-04	Dissolved oxygen saturation	KINGSTON	5-M	3-ND
MASCOMA LAKE - DARTMOUTH COLLEGE BEACH	NHLAK801060105-04-04	Dissolved oxygen saturation	ENFIELD	5-M	3-ND
LAKE MASSASECUM - FRENCH'S PARK TOWN BEACH	NHLAK700030302-04-03	Dissolved oxygen saturation	BRADFORD	5-M	3-ND
HARRISVILLE LAKE - SUNSET TOWN BEACH	NHLAK700030103-05-02	Dissolved oxygen saturation	HARRISVILLE	5-M	3-ND
MASCOMA LAKE - SHAKOMA BEACH	NHLAK801060105-04-02	Dissolved oxygen saturation	ENFIELD	5-M	3-ND
MASCOMA LAKE - CRESCENT BEACH	NHLAK801060105-04-03	Dissolved oxygen saturation	ENFIELD	5-M	3-ND
GREAT POND - CAMP BLUE TRIANGLE BEACH	NHLAK700061403-06-03	Dissolved oxygen saturation	KINGSTON	5-M	3-ND
SUNAPEE LAKE - DEWEY (TOWN) BEACH	NHLAK801060402-05-03	Dissolved oxygen saturation	SUNAPEE	5-M	3-ND
		Oxygen, Dissolved	SUNAPEE	5-M	3-ND
PLEASANT LAKE - VEASEY PARK BEACH	NHLAK700060502-09-02	Dissolved oxygen saturation	DEERFIELD	5-M	3-ND
POTANIPO POND - CAMP TEVYA BEACH	NHLAK700040401-02-03	Dissolved oxygen saturation	BROOKLINE	5-M	3-ND

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
HALFMOON LAKE - CAMP MI-TE-NA BEACH	NHLAK700060402-03-02	Dissolved oxygen saturation	ALTON	5-M	3-ND
LAKE POTANIPO - TOWN BEACH	NHLAK700040401-02-02	Dissolved oxygen saturation	BROOKLINE	5-M	3-ND
LAKE WAUKEWAN - TOWN BEACH	NHLAK700020108-02-03	Dissolved oxygen saturation	MEREDITH	5-M	3-ND
DEERING RESERVOIR - DEERING LAKE BEACH	NHLAK700060601-01-02	Dissolved oxygen saturation	DEERING	5-M	3-ND
DEERING RESERVOIR - HOPKINTON INDEPENDENT SCHOOL BEACH	NHLAK700060601-01-03	Dissolved oxygen saturation	DEERING	5-M	3-ND
MELENDY POND - TOWN BEACH	NHLAK700040401-01-02	Dissolved oxygen saturation	BROOKLINE	5-M	3-ND

Chloride for Aquatic Life Integrity

NASHUA RIVER - MINE FALLS DAM POND (NHIMP700040402-02)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
NASHUA RIVER - MINE FALLS DAM POND	NHIMP700040402-02	Chloride	NASHUA	5-M	3-ND

The Nashua River - Mine Falls Dam Pond (NHIMP700040402-02) was originally impaired for chloride for the aquatic life integrity designated use in 2006 based on data collected at station MINNASD. In 2014, it was discovered that station MINNASD was mistakenly tied to The Nashua River - Mine Falls Dam Pond (NHIMP700040402-02), but was actually located within Nashua River - Nashua Canal Dike (NHIMP700040402-03). It has since been re-associated within the Nashua River and all the data transferred to Nashua River - Nashua Canal Dike (NHIMP700040402-03). When the data was transferred to the correct waterbody in 2014 the chloride data from 1998 and 1999, which was used to impair the Nashua River - Mine Falls Dam Pond (NHIMP700040402-02) originally, was outside of the current period and therefore not used in the assessment of Nashua River - Nashua Canal Dike (NHIMP700040402-03), hence in 2016 the AU was categorized as potentially attaining standards (3-PAS) for chloride.

Because the basis for the original impairment in 2006 was based on data not within the waterbody, and there is no additional data available, NHDES has delisted the Nashua River - Mine Falls Dam Pond (NHIMP700040402-02) for chloride for the aquatic life integrity designated use. Because there is no other data in which to make an assessment, it has been placed in category 3-ND (no current data) for the 2018 cycle. Similarly, had the data been assigned to the correct waterbody, the Nashua River - Nashua Canal Dike (NHIMP700040402-03) would have received the impairment designation in 2006. The current data from the Nashua River - Nashua Canal Dike (NHIMP700040402-03) does not provide enough information in which to lift that impairment due to different sampling stations and sampling depths, therefore, the Nashua River - Nashua Canal Dike (NHIMP700040402-03) has been moved from 3-PAS to 5-M for chloride for the aquatic life integrity designated use.

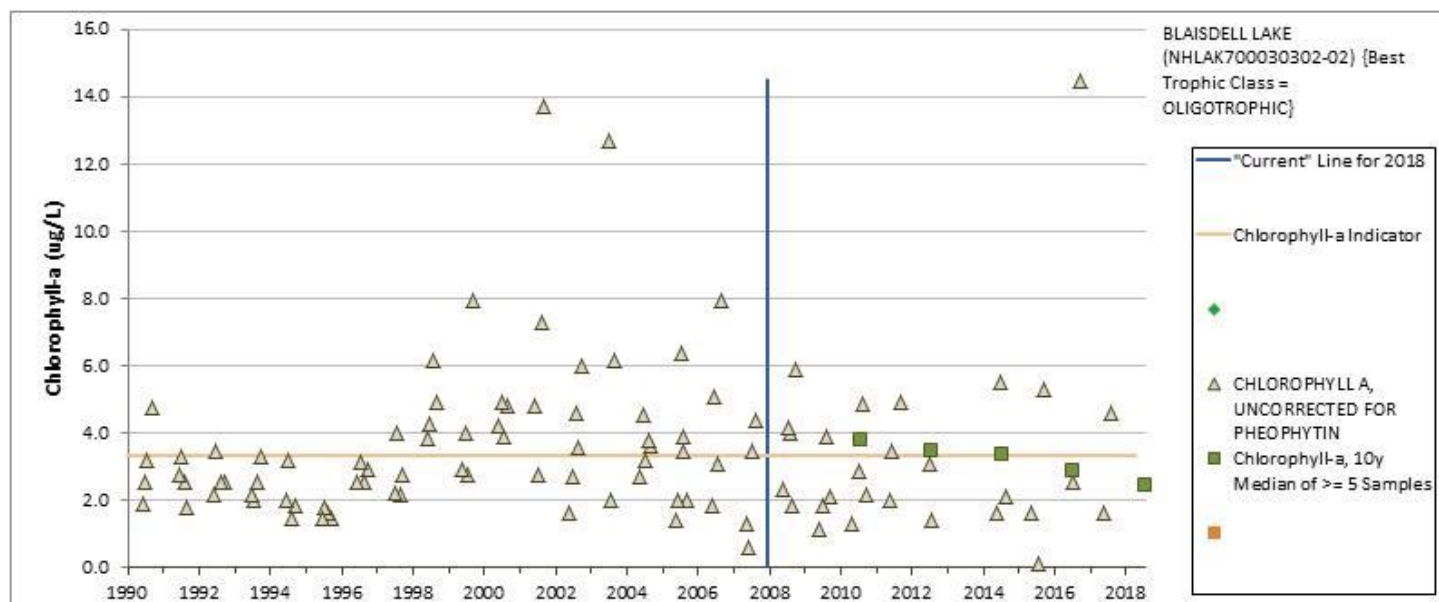
Chlorophyll-a & Total Phosphorus for Aquatic Life Integrity

BLAISDELL LAKE (NHLAK700030302-02)

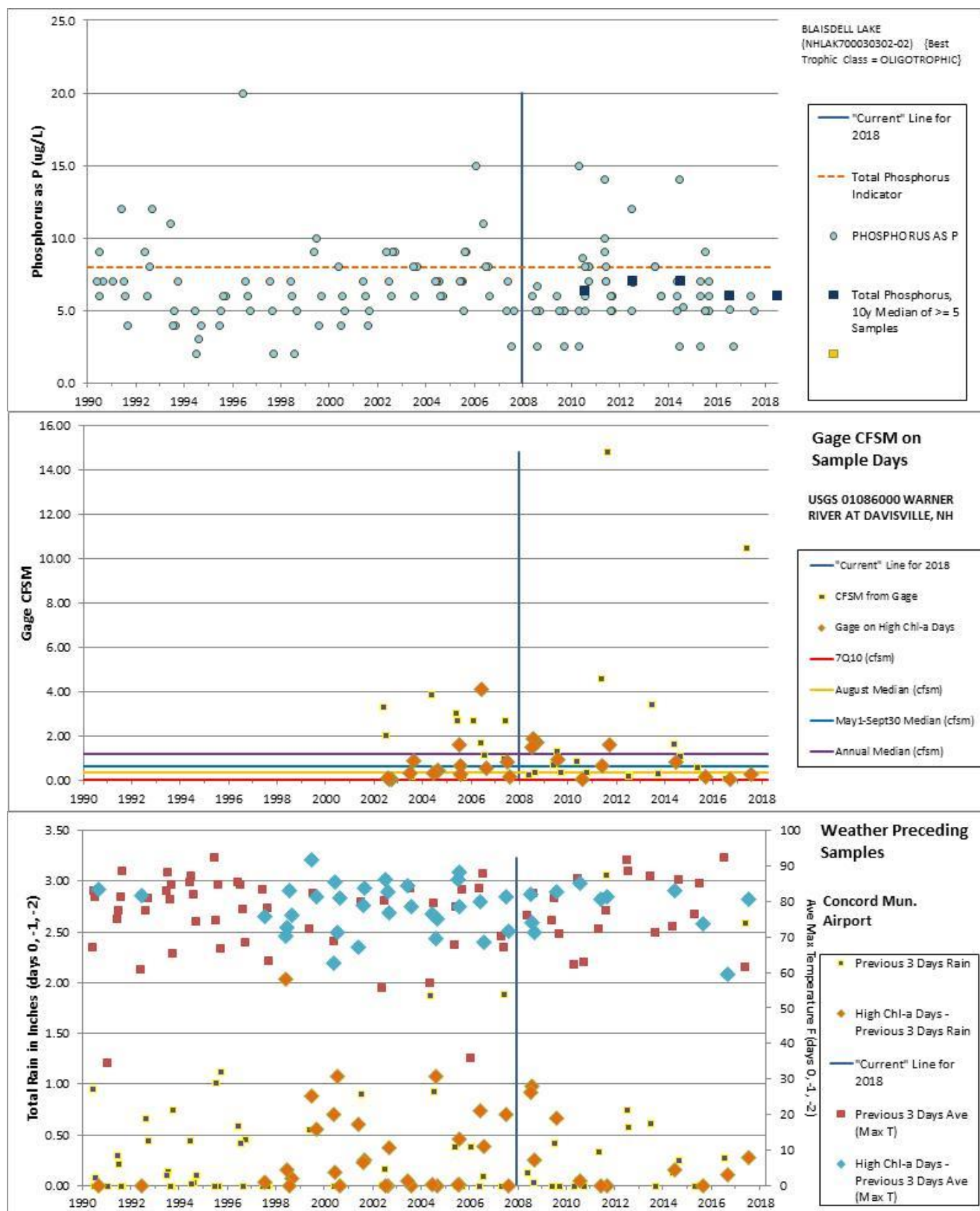
Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
BLAISDELL LAKE	NHLAK700030302-02	Chlorophyll-a	Sutton	5-M	2-M
		Phosphorus (Total)	Sutton	5-M	2-M

The 10-year median chlorophyll-a has been equal to or below the threshold since the 2014 assessment cycle. In the previous two 10-year periods (2010 and 2012), the median was 3.48 and 3.79 $\mu\text{g/L}$, which is minimally above the threshold. The total phosphorus 10-year median has never exceeded the oligotrophic threshold. This lake has been regularly monitored through VLAP since 1986. Data indicate significantly decreasing in-lake phosphorus levels as well as decreasing tributary phosphorus levels with a corresponding improvement in lake clarity. Blaisdell Lake (NHLAK700030302-02) has been moved from 5-M to 2-M for Chlorophyll-a for the aquatic life integrity designated use for the 2018 cycle.

Phosphorus was listed as impaired due to the chlorophyll-a impairment, per the Stressor-Response Matrix outlined in the CALM. The 10-year median phosphorus has continually been below the threshold for oligotrophic lakes. Therefore, Blaisdell Lake (NHLAK700030302-02) has been moved from 5-M to 2-M for Phosphorus (Total) for the aquatic life integrity designated use for the 2018 cycle.



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CAPTAIN POND (NHLAK700061102-03-01)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
CAPTAIN POND	NHLAK700061102-03-01	Chlorophyll-a	SALEM	5-M	4A-M
		Phosphorus (Total)	SALEM	4A-M	4A-M

On September 28, 2017, EPA approved the “Total Maximum Daily Load for Phosphorus for Captain Pond, Salem, NH.” The purpose of the TMDL is to address impairment of aquatic life due to total phosphorus from atmospheric deposition, internal loading, septic systems (within 125 feet of the lake), waterfowl, and watershed loads. Implementation of the TMDL will result in attainment of surface water quality criteria and thresholds for chlorophyll-a, DO, as well as cyanobacteria.

A copy of the EPA TMDL approval letter and additional detail documents may be found in <http://des.nh.gov/organization/divisions/water/wmb/tmdl/categories/publications.htm>

Since the TMDL has been approved by EPA, NHDES has placed Captain Pond (NHLAK700061102-03-01) in impairment Category 4A instead of on the 303(d) list (Category 5) for aquatic life due to chlorophyll-a.

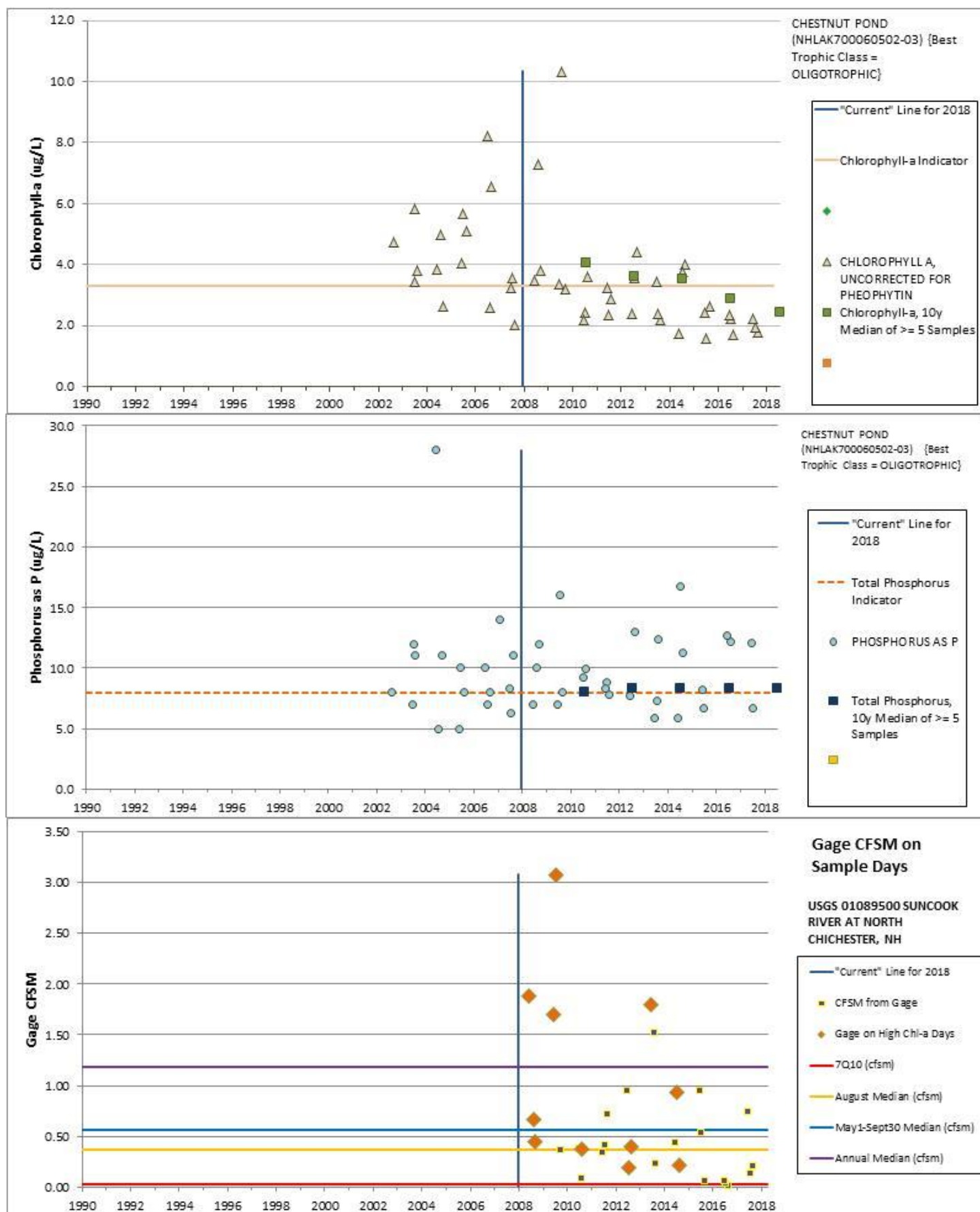
CHESTNUT POND (NHLAK700060502-03)

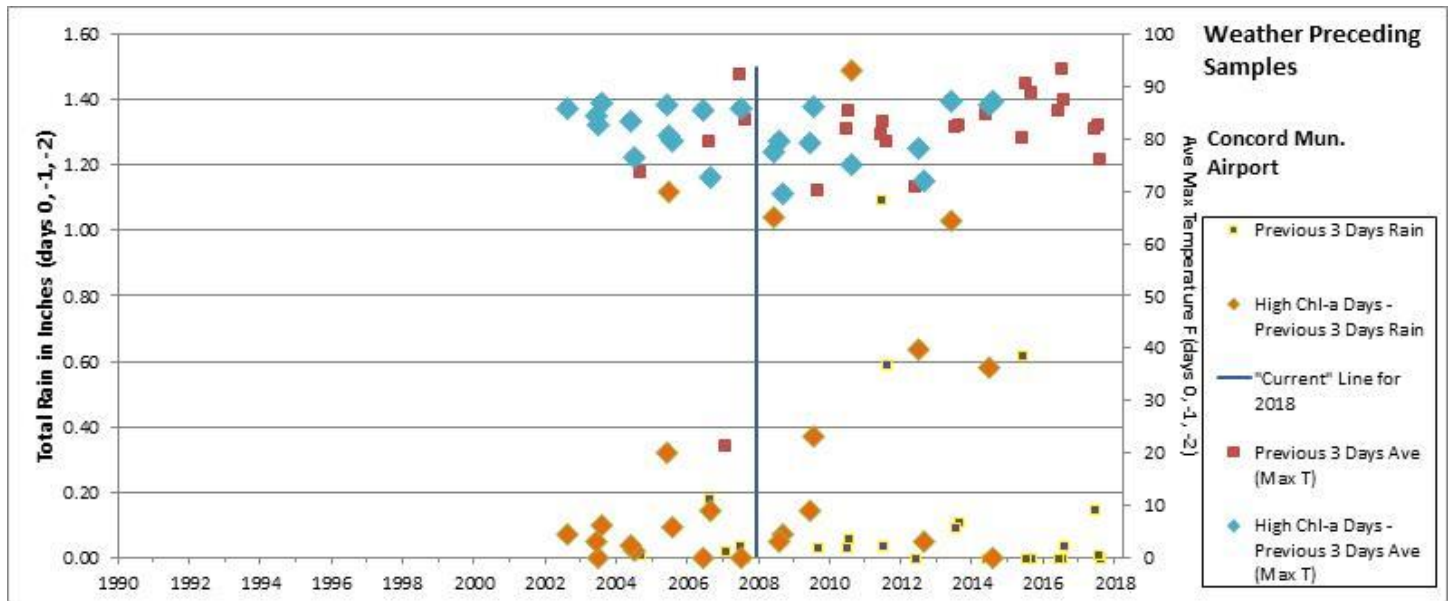
Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
CHESTNUT POND	NHLAK700060502-03	Chlorophyll-a	Epsom	5-M	2-M
		Phosphorus (Total)	Epsom	5-M	3-PNS

The 10-year chlorophyll-a medians has been below threshold (3.3 ug/L) for two assessment cycles and VLAP data indicate significantly decreasing chlorophyll-a levels over time. The 10-year phosphorus median has remained stable at 8.3 ug/L which is only marginally above the threshold (8 ug/L). Extensive road drainage improvements have also been complete around Chestnut Pond, which is helping to reduce chlorophyll-a inputs to the lake. For these reasons Chestnut Pond (NHLAK700060502-03) has been moved from 5-M to 2-M for Chlorophyll-a for the aquatic life integrity designated use for the 2018 cycle.

Phosphorus was listed as impaired due to the chlorophyll-a impairment, per the Stressor-Response Matrix outlined in the CALM. The 10-year median phosphorus has continually been slightly above the threshold for oligotrophic lakes. Per the Stressor-Response Matrix outlined in the CALM, Chestnut Pond (NHLAK700060502-03) has been moved from 5-M to 3-PNS for Phosphorus (Total) for the aquatic life integrity designated use for the 2018 cycle.

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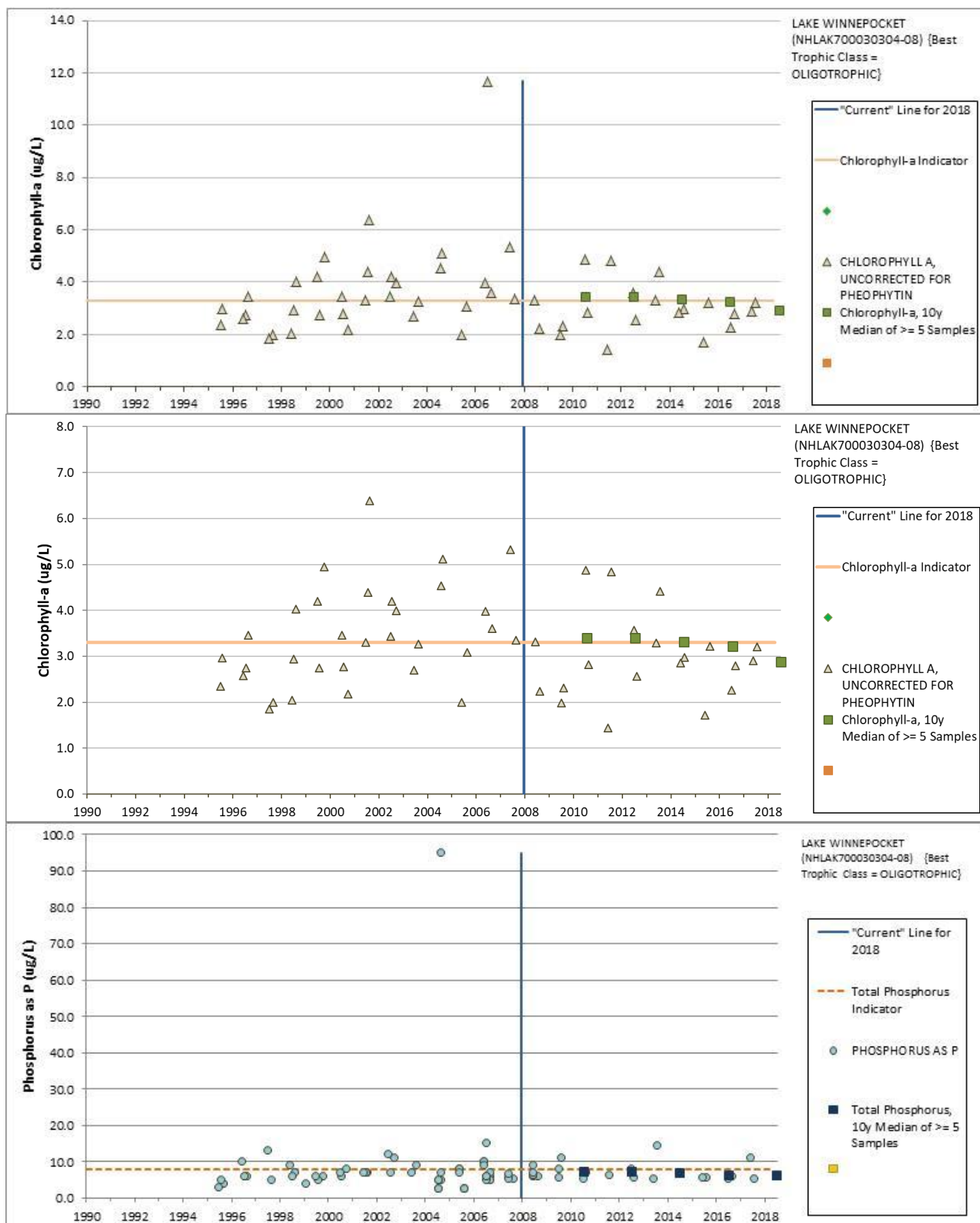
LAKE WINNEPOCKET (NHLAK700030304-08)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
LAKE WINNEPOCKET	NHLAK700030304-08	Chlorophyll-a	Webster	5-M	2-M
		Phosphorus (Total)	Webster	5-M	2-M

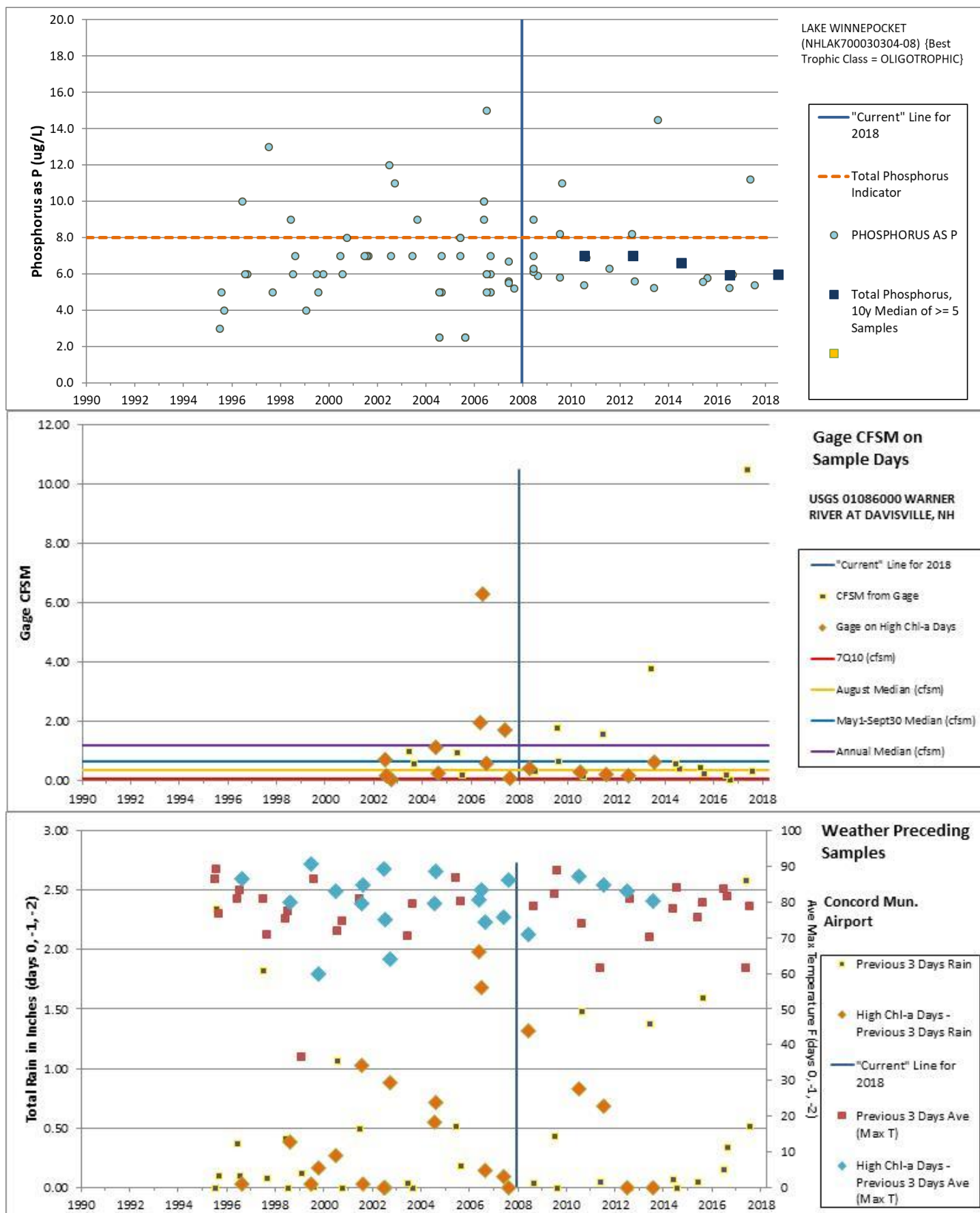
The 10-year median chlorophyll-a has been equal to or below the threshold since the 2014 assessment cycle. Prior to that, it was 3.39 ug/L for the 2010 and 2012 cycles, which is minimally above the threshold. This lake is regularly monitored through VLAP and data indicates that the 10-year median chlorophyll-a levels have been just slightly above or below the threshold (3.3 ug/L) since 2008. Because of the improving water quality, Lake Winnepocket (NHLAK700030304-08) has been moved from 5-M to 2-M for Chlorophyll-a for the aquatic life integrity designated use for the 2018 cycle.

Phosphorus was listed as impaired due to the chlorophyll-a impairment, per the Stressor-Response Matrix outlined in the CALM. The 10-year median phosphorus has continually been below the threshold for oligotrophic lakes. Therefore, Lake Winnepocket (NHLAK700030304-08) has been moved from 5-M to 2-M for Phosphorus (Total) for the aquatic life integrity designated use for the 2018 cycle.

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PHILLIPS POND (NHLAK600030802-03-01)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
PHILLIPS POND	NHLAK600030802-03-01	Chlorophyll-a	SANDOWN	5-M	4A-M
		Phosphorus (Total)	SANDOWN	5-M	4A-M

On September 27, 2018, EPA approved the “Total Maximum Daily Load for Phosphorus for Philips Pond, Sandown, NH.” The purpose of the TMDL is to address impairments of the aquatic life integrity designated use due to total phosphorus and chlorophyll-a, and for the primary contact recreation designated use due to cyanobacteria hepatotoxic microcystins. These impairments were due to atmospheric deposition, internal loading, septic systems (within 125 feet of the pond), waterfowl and watershed loads. The TMDL will result in attainment of surface water quality criteria and thresholds for total phosphorus, chlorophyll-a, dissolved oxygen, as well as cyanobacteria.

A copy of the EPA TMDL approval letter and additional detail documents may be found in <https://www.des.nh.gov/organization/divisions/water/wmb/tmdl/documents/epareviewofphillipspond.pdf>

Since the TMDL has been approved by EPA, NHDES has placed Phillips Pond (NHLAK600030802-03-01) in impairment Category 4A instead of on the 303(d) list (Category 5) for aquatic life integrity due to total phosphorus and chlorophyll-a.

Cyanobacteria for Primary Contact Recreation (i.e. swimming)

GREAT POND (NHLAK700061403-06-01) and GREAT POND - KINGSTON STATE PARK BEACH (NHLAK700061403-06-02)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
GREAT POND	NHLAK700061403-06-01	Cyanobacteria	KINGSTON	5-M	2-M
GREAT POND - KINGSTON STATE PARK BEACH	NHLAK700061403-06-02	hepatotoxic microcystins			

Great Pond and Great Pond - Kingston State Park Beach (NHLAK700061403-06-01 and NHLAK700061403-06-02) were listed as impaired for the primary contact recreation designated use due to cyanobacteria hepatotoxic microcystins in 2010. The 2010 listing was based on a cyanobacteria bloom that occurred at the Kingston State Park Beach in 2009. Great Pond participates in NHDES’ Volunteer Lake Assessment Program (VLAP) and the Kingston State Park Beach is monitored three times a year by the NHDES Beach Program. Like most VLAP lakes, a large number of the volunteers live right on the lake and are on a constant look-out for issues. Those volunteers have not detected a bloom since 2009. Similarly, NHDES Beach Program staff is trained to watch for cyanobacteria and no blooms have been reported since the 2009 bloom. The 10-year summer median total phosphorus (stressor variable) is 11 ug/L and the chlorophyll-a (response variable) median is 3.4 ug/L. Both of these concentrations are below the mesotrophic thresholds (TP = 12 ug/L and Chl-a = 5 ug/L) for nutrients, which indicates the likelihood of algal growth is low. Great Pond and Great Pond - Kingston State Park Beach (NHLAK700061403-06-01 and NHLAK700061403-06-02) have been moved from category 5-M to 2-M for cyanobacteria hepatotoxic microcystins for the primary contact recreation designated use based on the information gathered for the current assessment period.

KEZAR LAKE (NHLAK700030303-03-01) and KEZAR LAKE - WADLEIGH STATE PARK BEACH (NHLAK700030303-03-02)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
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KEZAR LAKE	NHLAK700030303-03-01	Cyanobacteria	SUTTON	5-M	2-M
KEZAR LAKE - WADLEIGH STATE PARK BEACH	NHLAK700030303-03-02	hepatotoxic microcystins			

Kezar Lake, located in central New Hampshire, has had a long history of water quality problems. Following a major fish kill and persistent algae blooms beginning in the early 1960s, a Diagnostic/Feasibility Study was initiated in 1980 under section 314 of the Clean Water Act. The study established that the lake's problems were caused by internal loading of phosphorus as a result of years of effluent discharge from an upstream wastewater treatment facility from 1931 to 1981. The Diagnostic/Feasibility Study outlined a management strategy to restore the lake which began to be implemented in 1984 by a Restoration/Protection Project. Two main approaches were employed to reduce phosphorus concentrations in the lake. First, aluminum salts were injected into the hypolimnion to inactivate sediment phosphorus regeneration. The injections were performed using a modified barge system that was an efficient and cost-effective means of aluminum salts application. Second, upstream riparian wetlands were manipulated by elevating water level and planting new species to encourage phosphorus removal by sedimentation and vegetative uptake. For more details on the Clean Lakes Program project on Kezar Lake please see https://www.epa.gov/sites/production/files/2017-01/documents/nh_kezar_508_0.pdf.

In response to these management activities, Kezar Lake was able to be removed from the State's 303(d) list of impaired waters for chlorophyll-a and total phosphorus for the aquatic life designated use during the 2012 cycle (approved by EPA on 9/24/2015). However, Kezar Lake and Kezar Lake - Wadleigh State Park Beach (NHLAK700030303-03-01 and NHLAK700030303-03-02) were still listed as impaired for the primary contact recreation designated use due to cyanobacteria hepatotoxic microcystins. The 2008 listing was based on the history of algal blooms in the lake and a cyanobacteria bloom documented in 2008. The most recent bloom was documented in 2012, which had a total cell count of 100,000 cell/mL. Kezar Lake participates in NHDES' Volunteer Lake Assessment Program (VLAP) and the Wadleigh State Park Beach is monitored three times a year by the NHDES Beach Program. Like most VLAP lakes, a large number of the volunteers live right on the lake and are on a constant look-out for issues. Those volunteers have not detected a bloom since 2012. Similarly, NHDES Beach Program employees are trained to watch for cyanobacteria and have not reported any blooms since the 2012 bloom. Finally, the beach is visually evaluated by State Park staff daily. The 10-year summer median total phosphorus (stressor variable) is 12 ug/L and the chlorophyll-a (response variable) median is 3.7 ug/L. Both of these concentrations are at or below the mesotrophic thresholds (TP = 12 ug/L and Chl-a = 5 ug/L) for nutrients, which indicates the likelihood of excessive algal growth is low. As a result of the management activities and continued improvement in water quality, Kezar Lake and Kezar Lake - Wadleigh State Park Beach (NHLAK700030303-03-01 and NHLAK700030303-03-02) have been moved from category 5-M to 2-M for cyanobacteria hepatotoxic microcystins for the primary contact recreation designated use based on the information gathered for the current assessment period.

MIRROR LAKE (NHLAK700020106-02-01) and MIRROR LAKE - MIRROR LAKE BEACH (NHLAK700020106-02-02)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
MIRROR LAKE	NHLAK700020106-02-01	Cyanobacteria	TUFTONBORO,	5-M	2-M
MIRROR LAKE - MIRROR LAKE BEACH	NHLAK700020106-02-02	hepatotoxic microcystins	WOLFEBORO		

Mirror Lake and Mirror Lake - Mirror Lake Beach (NHLAK700020106-02-01 and NHLAK700020106-02-02) were listed as impaired for primary contact recreation due to cyanobacteria hepatotoxic microcystins in 2008. The 2008 listing was based on a cyanobacteria bloom in 2008. Although no other blooms have been reported, the lake was sampled twice in 2011 by NHDES due to cyanobacteria concerns. Both samples were below the cyanobacteria threshold of 70,000 cells/mL (12,150 cell/mL on 9/9/11 & 55,479 cells/mL on 9/24/11). Mirror Lake participates in NHDES' Volunteer Lake Assessment Program (VLAP) and the Mirror Lake Beach is monitored three times a year by the NHDES Beach Program. Like most VLAP lakes, a large number of the volunteers live right on the lake and are on a constant look-out for issues.

Those volunteers have not detected a bloom since 2008. Similarly, NHDES Beach Program employees are trained to watch for cyanobacteria and have not reported any blooms since the 2008 bloom. In addition to these NHDES programs, the lake is also part of UNH's Lakes Lay Monitoring Program (LLMP) and a masters' student has been studying the lake as part of their thesis. The data gathered to date indicates that cyanobacteria are present within the lake but at low levels and primarily within a deep layer (>5 meters) of the lake. The most recent samples taken by UNH on 8/8/2018 showed total (colony) counts at a depth of 0-3 meters were 553 (colonies/mL), while the sample taken at a depth of 5.75 meters had 2,715 (colonies/mL). These counts do not reflect actual cell concentrations per colony and therefore cannot be compared directly the state threshold of 70,000 cells/mL. The 10-year summer median total phosphorus (stressor variable) is 13.5 ug/L and the chlorophyll-a (response variable) median is 3.6 ug/L. The total phosphorus concentration was above the mesotrophic threshold (TP = 12 ug/L) for nutrients, which indicates it could be aiding in the growth of algae in the deep layer of the lake. However, the primary contact recreation designated use is mostly in the shallow areas of the lake whereas the deep waters are not commonly used for recreational purposes. Therefore, it is reasonable to assume that even elevated concentrations of cyanobacteria found within a deep layer of the lake would not significantly interfere with the primary contact recreational use of the lake. Mirror Lake and Mirror Lake - Mirror Lake Beach (NHLAK700020106-02-01 and NHLAK700020106-02-02) have been moved from category 5-M to 2-M for cyanobacteria hepatotoxic microcystins for the primary contact recreation designated use based on the information gathered for the current assessment period.

PHILLIPS POND (NHLAK600030802-03-01) AND PHILLIPS POND TOWN BEACH SANDOWN (NHLAK600030802-03-02)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
PHILLIPS POND	NHLAK600030802-03-01	Cyanobacteria	SANDOWN	5-M	4A-M
PHILLIPS POND TOWN BEACH SANDOWN	NHLAK600030802-03-02	hepatotoxic microcystins			

On September 27, 2018, EPA approved the "Total Maximum Daily Load for Phosphorus for Philips Pond, Sandown, NH." The purpose of the TMDL is to address impairments of the aquatic life integrity designated use due to total phosphorus and chlorophyll-a, and for the primary contact recreation designated use due to cyanobacteria hepatotoxic microcystins. These impairments were due to atmospheric deposition, internal loading, septic systems (within 125 feet of the pond), waterfowl and watershed loads. The TMDL will result in attainment of surface water quality criteria and thresholds for total phosphorus, chlorophyll-a, dissolved oxygen, as well as cyanobacteria.

A copy of the EPA TMDL approval letter and additional detail documents may be found in <https://www.des.nh.gov/organization/divisions/water/wmb/tmdl/documents/epareviewofphillipspond.pdf>

Since the TMDL has been approved by EPA, NHDES has placed Phillips Pond (NHLAK600030802-03-01) and Phillips Pond Town Beach Sandown (NHLAK600030802-03-02) in impairment Category 4A instead of on the 303(d) list (Category 5) for primary contact recreation due to Cyanobacteria hepatotoxic microcystins.

Toxics for Aquatic Life Integrity

ASHUELOT RIVER - FISK MILL HYDRO (NHIMP802010403-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
ASHUELOT RIVER - FISK MILL HYDRO	NHIMP802010403-04	DDD	HINSDALE	5-M	3-ND

The Ashuelot River - Fisk Mill Hydro was originally impaired for DDD for the aquatic life designated use in 2006 based on sediment data collected in 2003. This original impairment was based on 3 sediment samples that were reported as <9 ug/kg, which was the detection limit of the analytical method. NHDES' typical assessment process uses half the value of

samples that are reported as less than the detection limit (i.e. 4.5 ug/kg). Because half the detection limit is above the TEC threshold of 3.54 ug/kg, the waterbody was mistakenly impaired. Since the original impairment was made, NHDES has implemented additional QA/QC checks so as to not make an impairment determination based solely on data that was reported as below the detection limit when half of that value is above the threshold. Because the below the detection limit samples were the basis for the original impairment in 2006, and there is no additional data available, NHDES has delisted (removed from the 303(d) list) the Ashuelot River - Fisk Mill Hydro for DDD for the aquatic life integrity designated use. Because the data has aged out of the current assessment period (2012-2018), it has been placed in category 3-ND (no current data) for the 2018 cycle.

ASHUELOT RIVER - FISK MILL HYDRO (NHIMP802010403-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
ASHUELOT RIVER - FISK MILL HYDRO	NHIMP802010403-04	Acenaphthene	HINSDALE	5-M	3-ND

The Ashuelot River - Fisk Mill Hydro was originally impaired for Acenaphthene for the aquatic life designated use in 2006 based on sediment data collected in 2003. This original impairment was based on 3 sediment samples that were reported as <40 ug/kg and <50 ug/kg, which were the detection limits of the analytical methods. NHDES' typical assessment process uses half the value of samples that are reported as less than the detection limit (i.e. 20 and 25 ug/kg). Because half the detection limit is above the TEC threshold of 6.71 ug/kg, the waterbody was mistakenly impaired. Since the original impairment was made NHDES has implemented additional QA/QC checks so as to not make an impairment determination based solely on data that was reported as below the detection limit when half of that value is above the threshold. Because the below the detection limit samples were the basis for the original impairment in 2006, and there is no additional data available, NHDES delisted (removed from the 303(d) list) the Ashuelot River - Fisk Mill Hydro for Acenaphthene for the aquatic life integrity designated use. Because the data has aged out of the current assessment period (2012-2018) it has been placed in category 3-ND (no current data) for the 2018 cycle.

ASHUELOT RIVER - FISK MILL HYDRO (NHIMP802010403-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
ASHUELOT RIVER - FISK MILL HYDRO	NHIMP802010403-04	2-Methylnaphthalene	HINSDALE	5-M	3-ND

The Ashuelot River - Fisk Mill Hydro was originally impaired for 2-Methylnaphthalene for the aquatic life designated use in 2006 based on sediment data collected in 2003. This original impairment was based on 3 sediment samples that were reported as <40 ug/kg and <50 ug/kg, which were the detection limits of the analytical methods. NHDES' typical assessment process uses half the value of samples that are reported as less than the detection limit (i.e. 20 and 25 ug/kg). Because half the detection limit is above the TEC threshold of 20.2 ug/kg for two of the samples the waterbody was mistakenly impaired. Since the original impairment was made NHDES has implemented additional QA/QC checks so as to not make an impairment determination based solely on data that was reported as below the detection limit when half of that value is above the threshold. Because the below the detection limit samples were the basis for the original impairment in 2006, and there is no additional data available, NHDES has delisted (removed from the 303(d) list) the Ashuelot River - Fisk Mill Hydro for 2-Methylnaphthalene for the aquatic life integrity designated use. Because the data has aged out of the current assessment period (2012-2018) it has been placed in category 3-ND (no current data) for the 2018 cycle.

ASHUELOT RIVER - FISK MILL HYDRO (NHIMP802010403-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
ASHUELOT RIVER - FISK MILL HYDRO	NHIMP802010403-04	DDE	HINSDALE	5-M	3-ND

The Ashuelot River - Fisk Mill Hydro was originally impaired for DDE for the aquatic life designated use in 2006 based on sediment data collected in 2003. This original impairment was based on 3 sediment samples that were reported as <9 ug/kg, which was the detection limit of the analytical method. NHDES' typical assessment process uses half the value of samples that are reported as less than the detection limit (i.e. 4.5 ug/kg). Because half the detection limit is above the TEC threshold of 1.42 ug/kg, the waterbody was mistakenly impaired. Since the original impairment was made NHDES has implemented additional QA/QC checks so as to not make an impairment determination based solely on data that was reported as below the detection limit when half of that value is above the threshold. Because the below the detection limit samples were the basis for the original impairment in 2006, and there is no additional data available, NHDES has delisted (removing from the 303(d) list) the Ashuelot River - Fisk Mill Hydro for DDE for the aquatic life integrity designated use. Because the data has aged out of the current assessment period (2012-2018) it has been placed in category 3-ND (no current data) for the 2018 cycle.

ASHUELOT RIVER - FISK MILL HYDRO (NHIMP802010403-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
ASHUELOT RIVER - FISK MILL HYDRO	NHIMP802010403-04	Dieldrin	HINSDALE	5-M	3-ND

The Ashuelot River - Fisk Mill Hydro was originally impaired for Dieldrin for the aquatic life designated use in 2006 based on sediment data collected in 2003. This original impairment was based on 3 sediment samples that were reported as <9 ug/kg, which was the detection limit of the analytical method. NHDES' typical assessment process uses half the value of samples that are reported as less than the detection limit (i.e. 4.5 ug/kg). Because half the detection limit is above the TEC threshold of 2.85 ug/kg, the waterbody was mistakenly impaired. Since the original impairment was made NHDES has implemented additional QA/QC checks so as to not make an impairment determination based solely on data that was reported as below the detection limit when half of that value is above the threshold. Because the below the detection limit samples were the basis for the original impairment in 2006, and there is no additional data available, NHDES has delisted (removed from the 303(d) list) the Ashuelot River - Fisk Mill Hydro for Dieldrin for the aquatic life integrity designated use. Because the data has aged out of the current assessment period (2012-2018) it has been placed in category 3-ND (no current data) for the 2018 cycle.

ASHUELOT RIVER - FISK MILL HYDRO (NHIMP802010403-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
ASHUELOT RIVER - FISK MILL HYDRO	NHIMP802010403-04	Endrin	HINSDALE	5-M	3-ND

The Ashuelot River - Fisk Mill Hydro was originally impaired for Endrin for the aquatic life designated use in 2006 based on sediment data collected in 2003. This original impairment was based on 3 sediment samples that were reported as <9 ug/kg, which was the detection limit of the analytical method. NHDES' typical assessment process uses half the value of samples that are reported as less than the detection limit (i.e. 4.5 ug/kg). Because half the detection limit is above the TEC threshold of 2.67 ug/kg, the waterbody was mistakenly impaired. Since the original impairment was made NHDES has implemented additional QA/QC checks so as to not make an impairment determination based solely on data that was reported as below the detection limit when half of that value is above the threshold. Because the below the detection limit samples were the basis for the original impairment in 2006, and there is no additional data available, NHDES has delisted (removed from the 303(d) list) the Ashuelot River - Fisk Mill Hydro for Endrin for the aquatic life integrity designated use. Because the data has aged out of the current assessment period (2012-2018) it has been placed in category 3-ND (no current data) for the 2018 cycle.

ASHUELOT RIVER - FISK MILL HYDRO (NHIMP802010403-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
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ASHUELOT RIVER - FISK MILL HYDRO	NHIMP802010403-04	Heptachlor	HINSDALE	5-P	3-ND
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The Ashuelot River - Fisk Mill Hydro was originally impaired for Heptachlor for the aquatic life designated use in 2006 based on sediment data collected in 2003. This original impairment was based on 3 sediment samples that were reported as <9 ug/kg, which was the detection limit of the analytical method. NHDES' typical assessment process uses half the value of samples that are reported as less than the detection limit (i.e. 4.5 ug/kg). Because half the detection limit is above the TEC threshold of 0.60 ug/kg, the waterbody was mistakenly impaired. Since the original impairment was made NHDES has implemented additional QA/QC checks so as to not make an impairment determination based solely on data that was reported as below the detection limit when half of that value is above the threshold. Because the below the detection limit samples were the basis for the original impairment in 2006, and there is no additional data available, NHDES has delisted (removed from the 303(d) list) the Ashuelot River - Fisk Mill Hydro for Heptachlor for the aquatic life integrity designated use. Because the data has aged out of the current assessment period (2012-2018) it has been placed in category 3-ND (no current data) for the 2018 cycle.

ASHUELOT RIVER - FISK MILL HYDRO (NHIMP802010403-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
ASHUELOT RIVER - FISK MILL HYDRO	NHIMP802010403-04	Lindane	HINSDALE	5-P	3-ND

The Ashuelot River - Fisk Mill Hydro was originally impaired for Lindane for the aquatic life designated use in 2006 based on sediment data collected in 2003. This original impairment was based on 3 sediment samples that were reported as <9 ug/kg, which was the detection limit of the analytical method. NHDES' typical assessment process uses half the value of samples that are reported as less than the detection limit (i.e. 4.5 ug/kg). Because half the detection limit is above the TEC threshold of 0.94 ug/kg, the waterbody was mistakenly impaired. Since the original impairment was made NHDES has implemented additional QA/QC checks so as to not make an impairment determination based solely on data that was reported as below the detection limit when half of that value is above the threshold. Because the below the detection limit samples were the basis for the original impairment in 2006, and there is no additional data available, NHDES has delisted (removed from the 303(d) list) the Ashuelot River - Fisk Mill Hydro for Lindane for the aquatic life integrity designated use. Because the data has aged out of the current assessment period (2012-2018) it has been placed in category 3-ND (no current data) for the 2018 cycle.

BLACK BROOK (NHRIV700060801-05-02)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
BLACK BROOK	NHRIV700060801-05-02	Mercury	MANCHESTER	5-P	3-ND

Black Brook (NHRIV700060801-05-02) was originally impaired for mercury for the aquatic life integrity designated use in 2006 based on two samples collected in 2000. The original results were collected at station USGS-01090477 and reported as 2.06 and 2.07 ng/L. The semi-automated process NHDES used at the time to compare the samples to the chronic standard (0.906 ug/L) mistakenly converted the sample in the wrong direction. Instead of dividing the samples by 1,000 to go from ng/L to ug/L, it multiplied them by 1,000. As a result, the samples were interpreted as 2,060 and 2,070 ug/L instead of 0.002 ug/L, which resulted in the waterbody being mistakenly impaired. NHDES has delisted (removed from the 303(d) list) Black Brook for mercury for the aquatic life integrity designated use. Because the data has aged out of the current assessment period (2012-2018) it has been placed in category 3-ND (no current data) for the 2018 cycle.

COCHECO RIVER (NHEST600030608-01)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
COCHECO RIVER	NHEST600030608-01	Biphenyl	DOVER	5-P	3-ND

The Cocheco River was originally impaired for Biphenyl for the aquatic life designated use in 2006 based on sediment data collected between 2000 and 2005 through the National Coastal Condition Assessment administered by EPA. This original impairment appears to have been incorrectly assigned, as all of the sediment data that was collected (n = 7, max = 5.26 ug/kg) were well below the TEC threshold of 1,100 ug/kg. None of the sediment data exceeds the TEC threshold, which could result in the Cocheco River being in full attainment for Biphenyl for the aquatic life integrity designated use. However, because the data has aged out of the current assessment period (2012-2018) it has been delisted (removed from the 303(d) list) and categorized as 3-ND (no current data) for the 2018 cycle.

ISINGLASS RIVER (NHRIV600030605-11)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary		
			Town Listed First	2016	2018
ISINGLASS RIVER	NHRIV600030605-11	Lead	STRAFFORD, BARRINGTON	5-M	3-ND

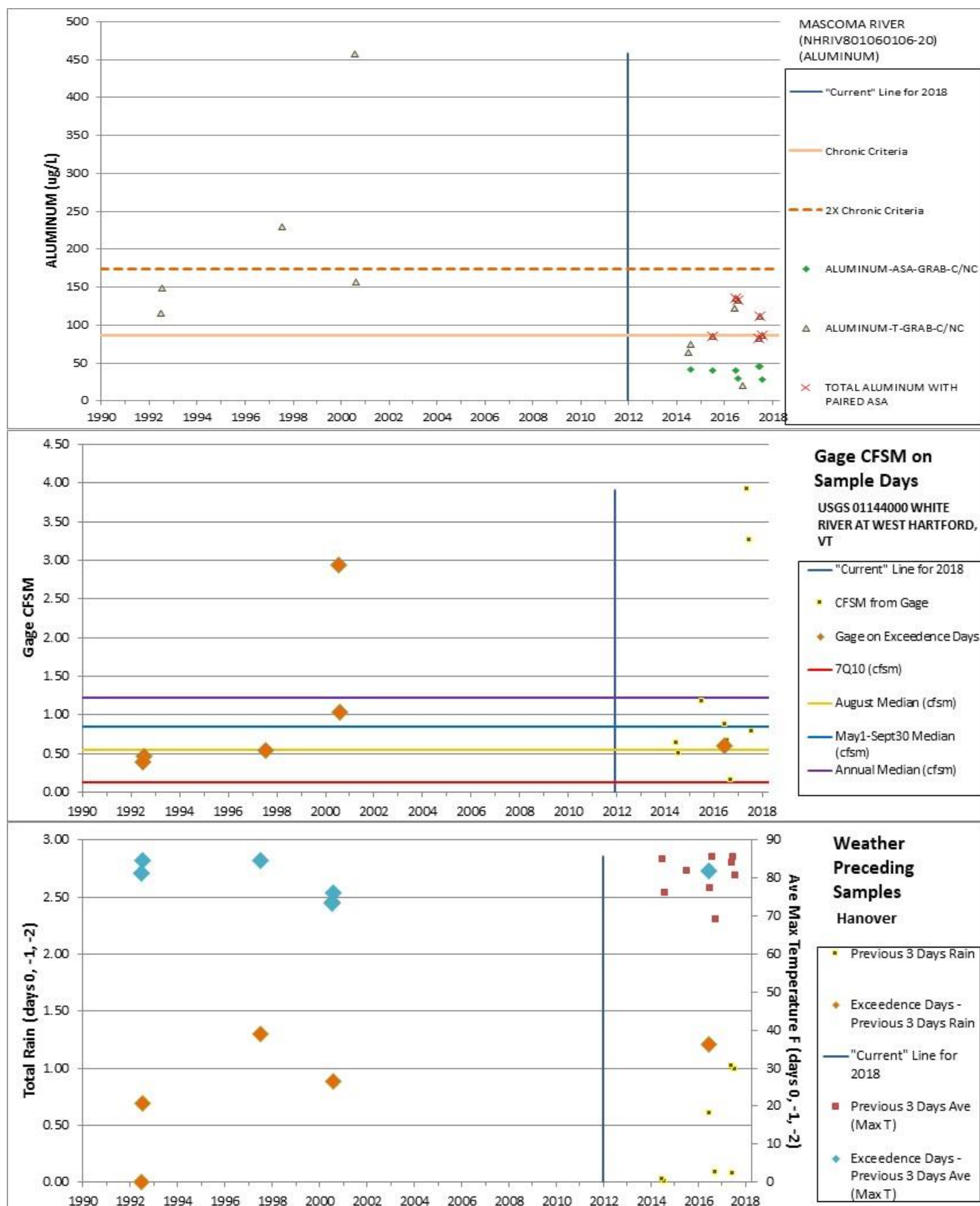
The Isinglass River was originally impaired for lead for the aquatic life designated use in 2006 based on data collected in 2000. This original impairment was based on one sample that was reported as <1 ug/L, which was the detection limit of the analytical method. NHDES' typical assessment process uses half the value of samples that are reported as less than the detection limit (i.e. 0.5 ug/L). Because half the detection limit is above the chronic threshold of 0.12 ug/L the waterbody was mistakenly impaired. Since the original impairment was made, NHDES has implemented additional QA/QC checks so as to not make an impairment determination based solely on data that was reported as below the detection limit when half of that value is above the threshold. Because the below the detection limit samples were the basis for the original impairment in 2006, and there is no additional data available, NHDES has delisted (removed from the 303(d) list) the Isinglass River for lead for the aquatic life integrity designated use. Because the data has aged out of the current assessment period (2012-2018) it has been placed in category 3-ND (no current data) for the 2018 cycle.

MASCOMA RIVER (NHRIV801060106-20)

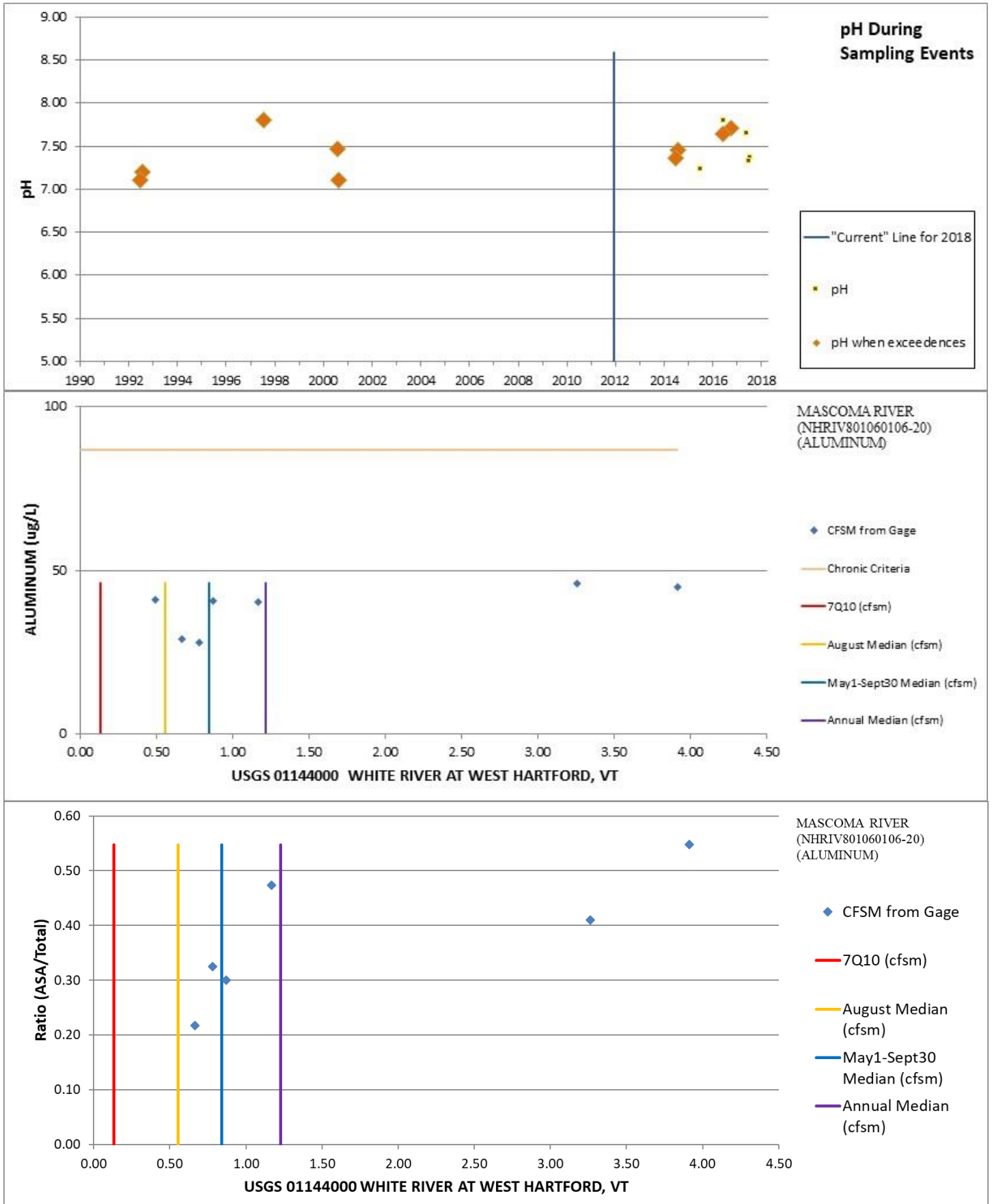
Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary		
			Town Listed First	2016	2018
MASCOMA RIVER	NHRIV801060106-20	Aluminum	LEBANON	5-M	2-G

The Mascoma River (NHRIV801060106-20) was originally listed as impaired for aluminum for the aquatic life integrity designated use based on high total aluminum data collected at station 01-MSC. On July 1, 2014, NHDES formally clarified to EPA that the aluminum criteria in the NH surface water quality regulations is acid-soluble aluminum, consistent with EPA's 1988 ambient water quality criteria document for aluminum. Although no concurrent acid-soluble aluminum samples were analyzed at station 01-MSC before 2014 it is reasonable to assume that the pre-2014 acid-soluble aluminum samples would be lower than the total aluminum concentrations. Six acid-soluble aluminum samples were collected at station 01-MSC between 2014 and 2017, and they were all below the chronic criteria of 87 ug/L. These current acid-soluble aluminum samples were collected under very similar weather conditions as the high total aluminum samples, 3-day rainfall totals below 1.5 inches, and during the same timeframe (June – August). One of the historic high total aluminum samples was collected in July under high flow conditions (2.94 cfs) at the White River gage (01144000). Although none of the current acid-soluble aluminum samples were collected under similar flow conditions, this flow was greater than the 90th percentile of July flows at the White River gage and is not considered typical of site conditions. The Mascoma River (NHRIV801060106-20) has been moved from 5-M to 2-G for aluminum for the aquatic life integrity designated use based on acid-soluble aluminum data collected under similar conditions as the historic elevated total aluminum samples.

Impairments Removed (i.e. Delisted) from the 2016 303(d) List of Threatened or Impaired Waters (i.e. Category 5)



Impairments Removed (i.e. Delisted) from the 2016 303(d) List of Threatened or Impaired Waters (i.e. Category 5)



SALMON BROOK - EMERSON BROOK (NHRIV700010802-07)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary	2016	2018
			Town Listed First		
SALMON BROOK - EMERSON BROOK	NHRIV700010802-07	Aluminum	SANBORNTON	5-M	3-ND

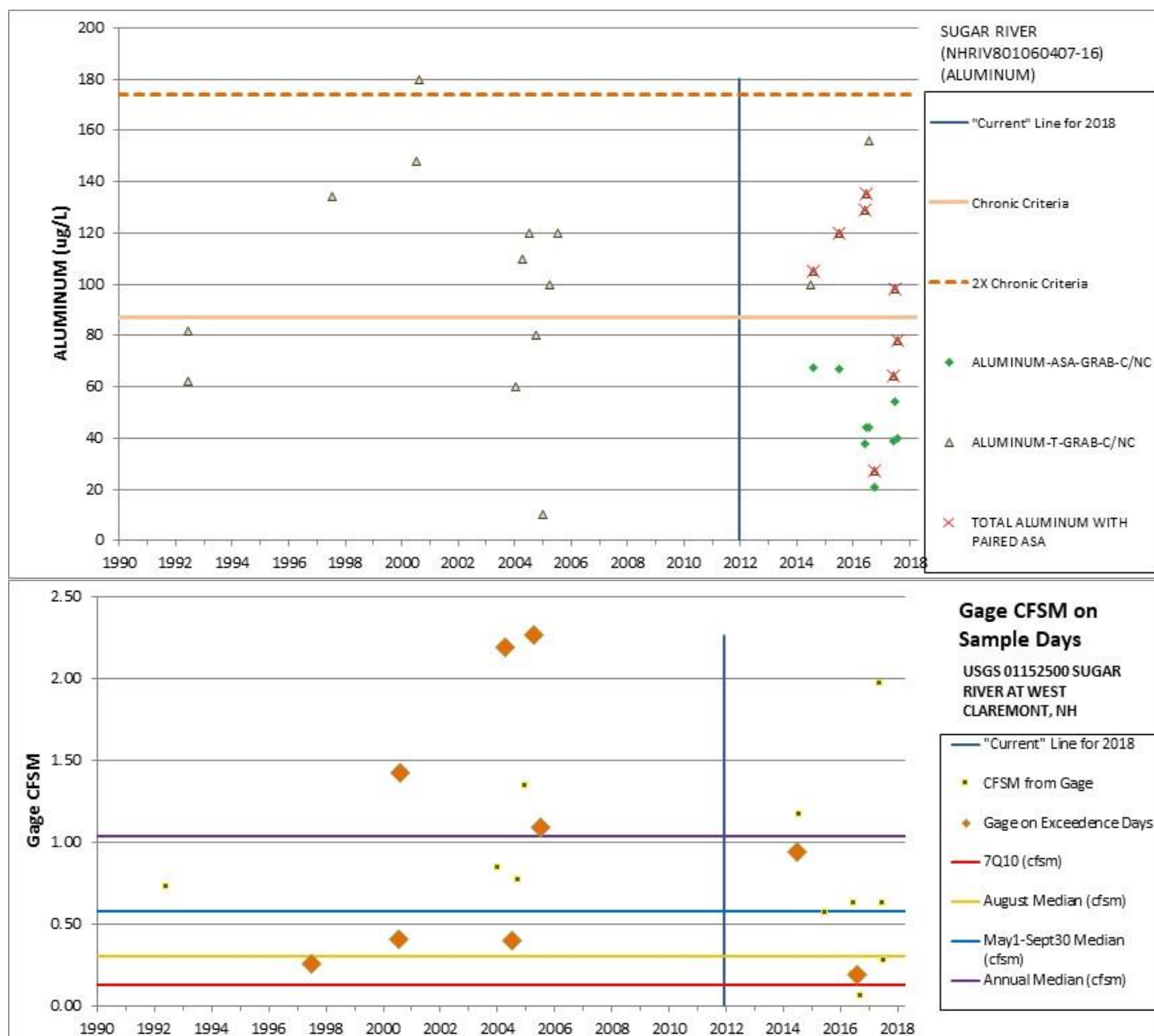
Salmon Brook - Emerson Brook was originally impaired for aluminum for the aquatic life integrity designated use in 2008 based on data collected at station 05-SLB. In 2010, it was discovered that station 05-SLB was mistakenly tied to Salmon Brook - Emerson Brook (NHRIV700010802-07), but was actually located within Salmon Brook (NHRIV700010802-10). It has since been re-associated within Salmon Brook and all the data transferred to Salmon Brook (NHRIV700010802-10), which is currently impaired (5-M) for aluminum. Because the basis for the original impairment in 2010 was based on data not within the waterbody, and there is no additional data available, NHDES has delisted the Salmon Brook - Emerson Brook (NHRIV700010802-07) for aluminum for the aquatic life integrity designated use. Because there is no other data in which to make an assessment, it has been placed in category 3-ND (no current data) for the 2018 cycle.

SUGAR RIVER (NHRIV801060407-16)

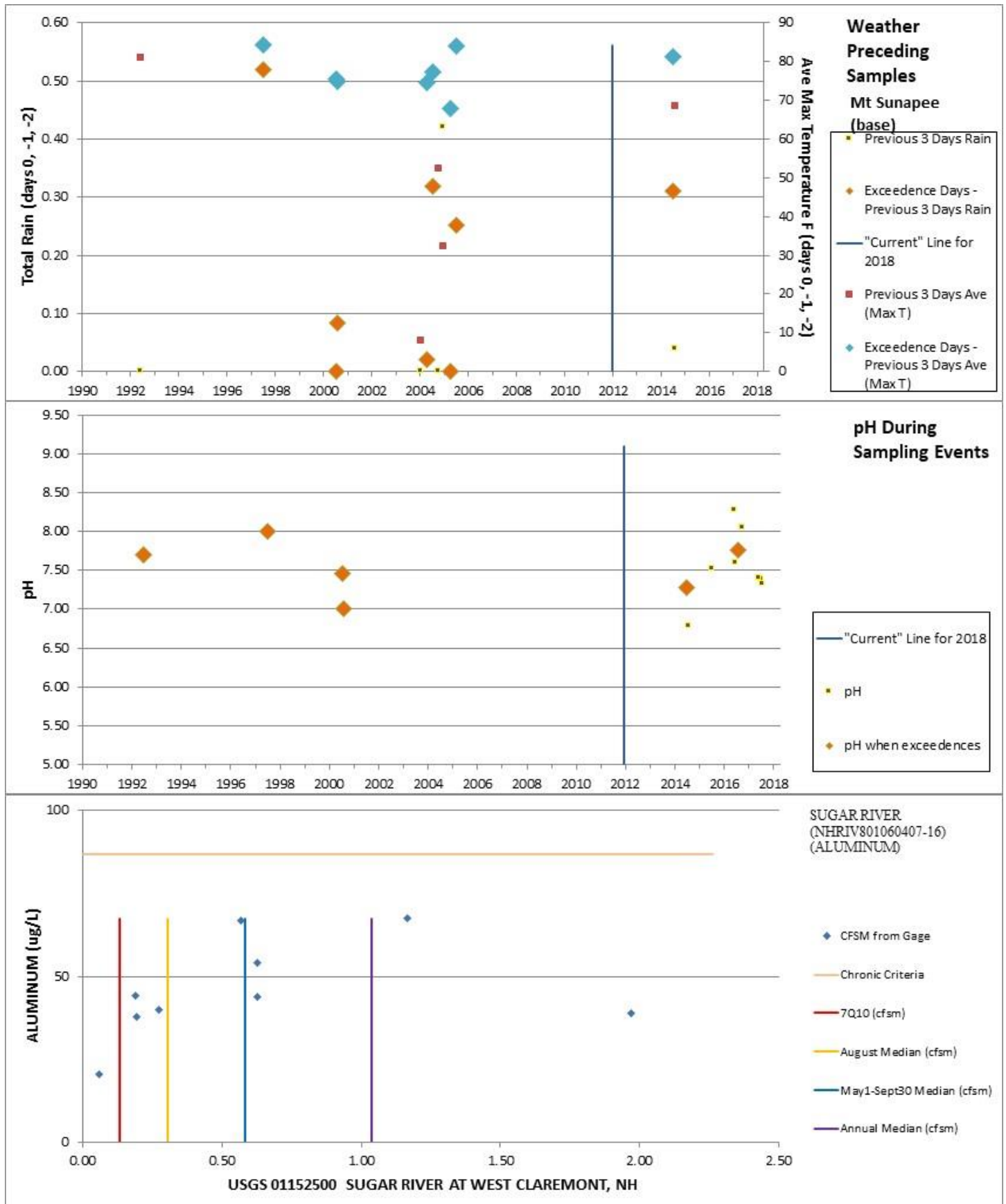
Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary	2016	2018
			Town Listed First		
SUGAR RIVER	NHRIV801060407-16	Aluminum	CLAREMONT	5-M	2-G

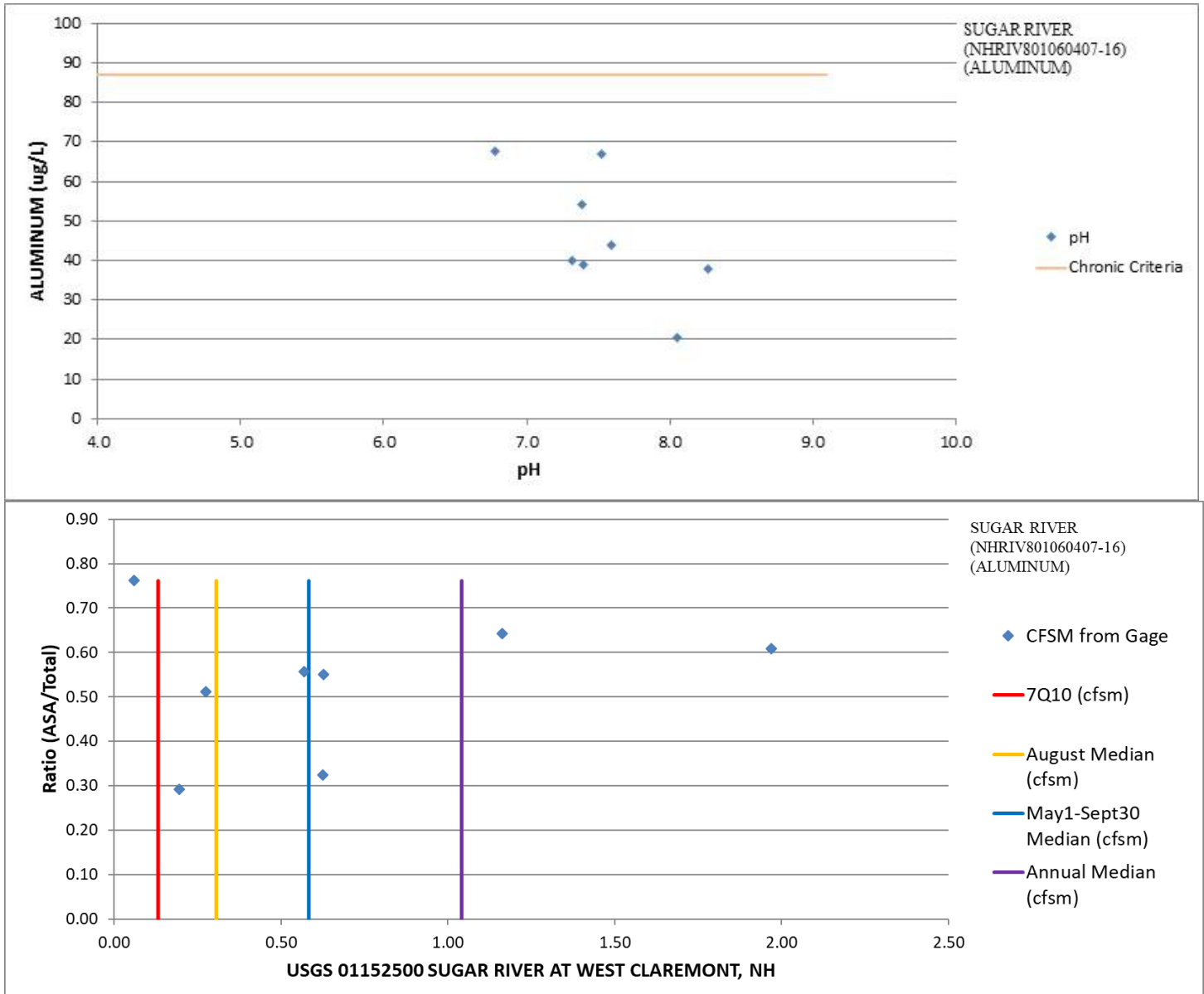
The Sugar River (NHRIV801060407-16) was originally listed as impaired for aluminum for the aquatic life integrity designated use in 2006 based on high total aluminum data collected at station 01-SGR. On July 1, 2014 NHDES formally clarified to EPA that the aluminum criteria in the NH surface water quality regulations is acid-soluble aluminum, consistent with EPA's 1988 ambient water quality criteria document for aluminum. Although no concurrent acid-soluble aluminum samples were analyzed at station 01-SGR prior to 2014, it is reasonable to assume that they would be lower than the total aluminum concentrations as evident with the sample collected during the current period. Nine acid-soluble aluminum samples were collected at station 01-SGR between 2014 and 2017, and they were all below the chronic criteria of 87 ug/L. These current acid-soluble aluminum samples were collected under very similar weather conditions as the pre-2014 high total aluminum samples. Both sets of data were collected with 3-day rainfall totals below 1.2 inches, flow levels below 2.0 cfs at the Sugar River gage (01152500), and during the same timeframe (June – August). The Sugar River (NHRIV801060407-16) has been moved from 5-M to 2-G for aluminum for the aquatic life integrity designated use based on acid-soluble aluminum data collected under similar conditions as the historic elevated total aluminum samples.

Impairments Removed (i.e. Delisted) from the 2016 303(d) List of Threatened or Impaired Waters (i.e. Category 5)



Impairments Removed (i.e. Delisted) from the 2016 303(d) List of Threatened or Impaired Waters (i.e. Category 5)





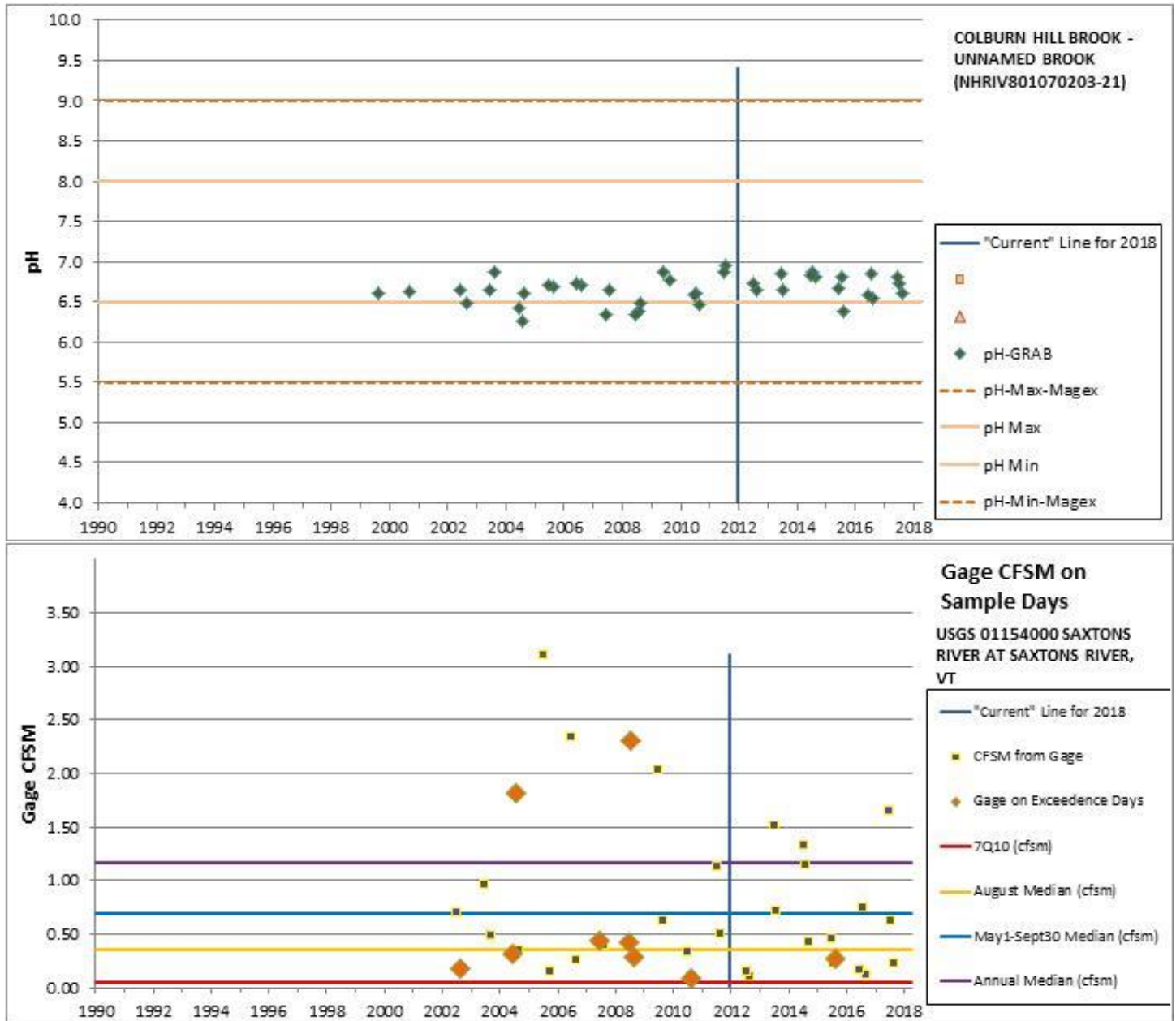
pH for Aquatic Life Integrity

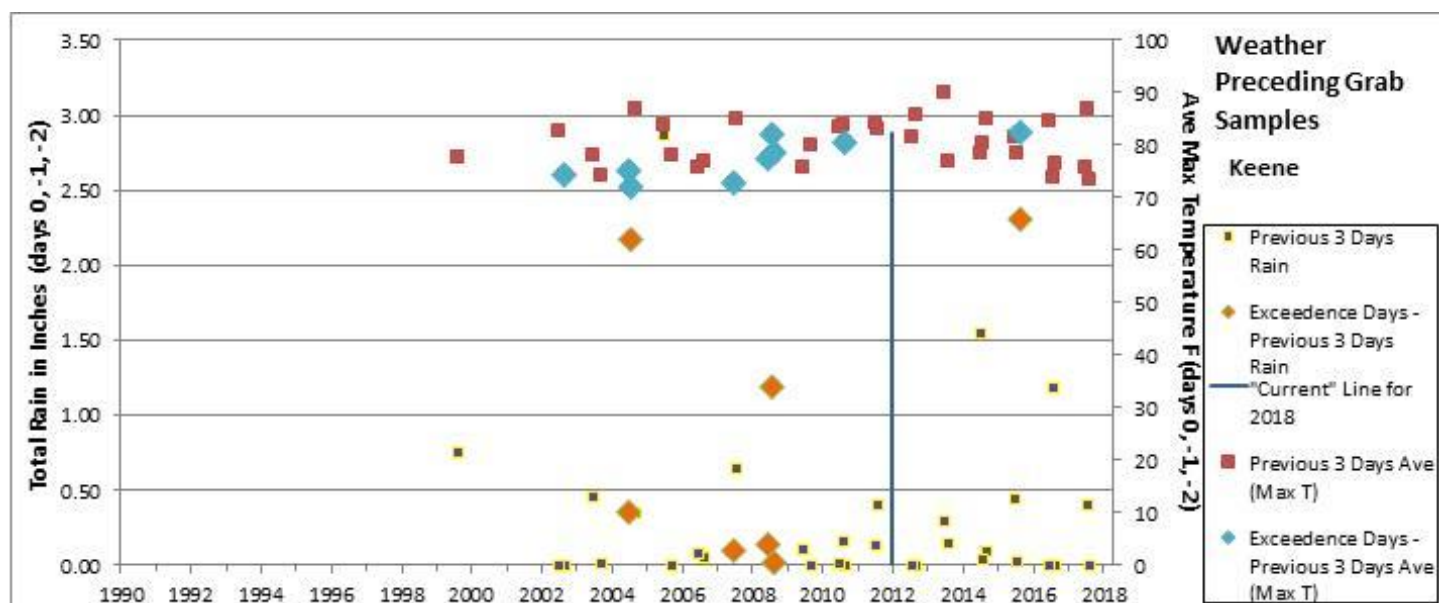
COLBURN HILL BROOK - UNNAMED BROOK (NHRIV801070203-21)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
COLBURN HILL BROOK - UNNAMED BROOK	NHRIV801070203-21	pH	ALSTEAD	5-M	2-M

Colburn Hill Brook was originally impaired in 2010. Since 2012, one of 16 (6.3%) of the grab samples collected from June through September at station WARALSCH was below the lower pH threshold of 6.5. Samples were collected at flows ranging from 0.12 – 1.66 CFSM on the Saxtons River gage (01154000) and weather conditions varying from 0.0 – 1.55 inches previous three days' precipitation. The 2016 assessment cycle noted that the amount of exceedences was under the 10% threshold as stated in the CALM, but maintained the 5-M designation with a request for more data. More data were collected in 2017 during the requested time frame under similar flow and weather conditions as previous years. The new data included in the 2018 assessment cycle supports delisting Colburn Hill Brook (NHRIV801070203-21) as the

number of exceedences remains below the 10% threshold and were collected under similar conditions as those that drove the initial impairment listing. Colburn Hill Brook (NHRIV801070203-21) has been moved from 5-M to 2-M for pH for the aquatic life integrity designated use based on data collected in the current assessment period.





Notes:

pH-GRAB = pH value from a grab sample.

"Magex" refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

"Current" Line for 2018 – Per the methodology outlined in the CALM, all data from this referenced data is considered "current" unless. Available older data is provided for context. See the 2016 CALM for additional details.

LOON POND BROOK (NHRIV700010104-06)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
LOON POND BROOK	NHRIV700010104-06	pH	LINCOLN	5-M	3-ND

Loon Pond Brook was originally impaired for pH for the aquatic life integrity designated use in 2008 based on data collected at station LOON-LPB1. In 2010 it was discovered that station LOON-LPB1 was mistakenly tied to the Loon Pond Brook (NHRIV700010104-06), but was actually located within Loon Pond Brook (NHRIV700010104-05). All of the LOON-LPB1 data was been transferred, and Loon Pond Brook (NHRIV700010104-05), is currently impaired (5-M) for pH for the aquatic life integrity designated use. Because the basis for the original impairment in 2008 was based on data not within the waterbody, and there is no additional data available, NHDES has delisted Loon Pond Brook (NHRIV700010104-06) for pH for the aquatic life integrity designated use. Because there is no other data in which to make an assessment, it has been placed in category 3-ND for the 2018 cycle.

NIGHTHAWK HOLLOW BROOK - AYERS BRANCH - UNNAMED BROOK (NHRIV700060402-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
NIGHTHAWK HOLLOW BROOK - AYERS BRANCH - UNNAMED BROOK	NHRIV700060402-04	pH	GILMANTON, BARNSTEAD	5-M	3-ND

Nighthawk Hollow Brook - Ayers Branch - Unnamed Brook was originally impaired for pH for the aquatic life integrity designated use in 2002 based on data collected at station SUNUBRNS. In 2009, it was discovered that station SUNUBRNS was mistakenly tied to Nighthawk Hollow Brook - Ayers Branch - Unnamed Brook (NHRIV700060402-04), but was actually located on Suncook River - Unnamed Brook (NHRIV700060402-18). All the SUNUBRNS data was been transferred and Suncook River - Unnamed Brook (NHRIV700060402-18) is currently impaired (5-M) for pH for the aquatic life integrity designated use. Because the basis for the original impairment in 2002 was based on data not within the waterbody, and there is no additional data available, NHDES has delisted Nighthawk Hollow Brook - Ayers Branch -

Unnamed Brook (NHRIV700060402-04) for pH for the aquatic life integrity designated use. Because there is no other data in which to make an assessment, it has been placed in category 3-ND (no current data) for the 2018 cycle.

NORTH BRANCH RIVER (NHRIV600030702-09)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
NORTH BRANCH RIVER	NHRIV600030702-09	pH	RAYMOND, CANDIA	5-M	3-ND

The North Branch River was originally impaired for pH for the aquatic life integrity designated use in 2008 based on data collected at station 01-NBR. In 2011 it was discovered that station 01-NBR was mistakenly tied to the North Branch River (NHRIV600030702-09), but was actually located on North Branch River – Unnamed Rivers (NHRIV600030702-07). All the 01-NBR data has been transferred and North Branch River – Unnamed Rivers (NHRIV600030702-07) is currently impaired (5-M) for pH for the aquatic life integrity designated use. Because the basis for the original impairment in 2008 was based on data not within the waterbody, and there is no additional data available, NHDES has delisted the North Branch River (NHRIV600030702-09) for pH for the aquatic life integrity designated use. Because there is no other data in which to make an assessment, it has been placed in category 3-ND (no current data) for the 2018 cycle.

SUGAR RIVER (NHRIV801060405-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
SUGAR RIVER	NHRIV801060405-04	pH	SUNAPEE	5-M	3-ND

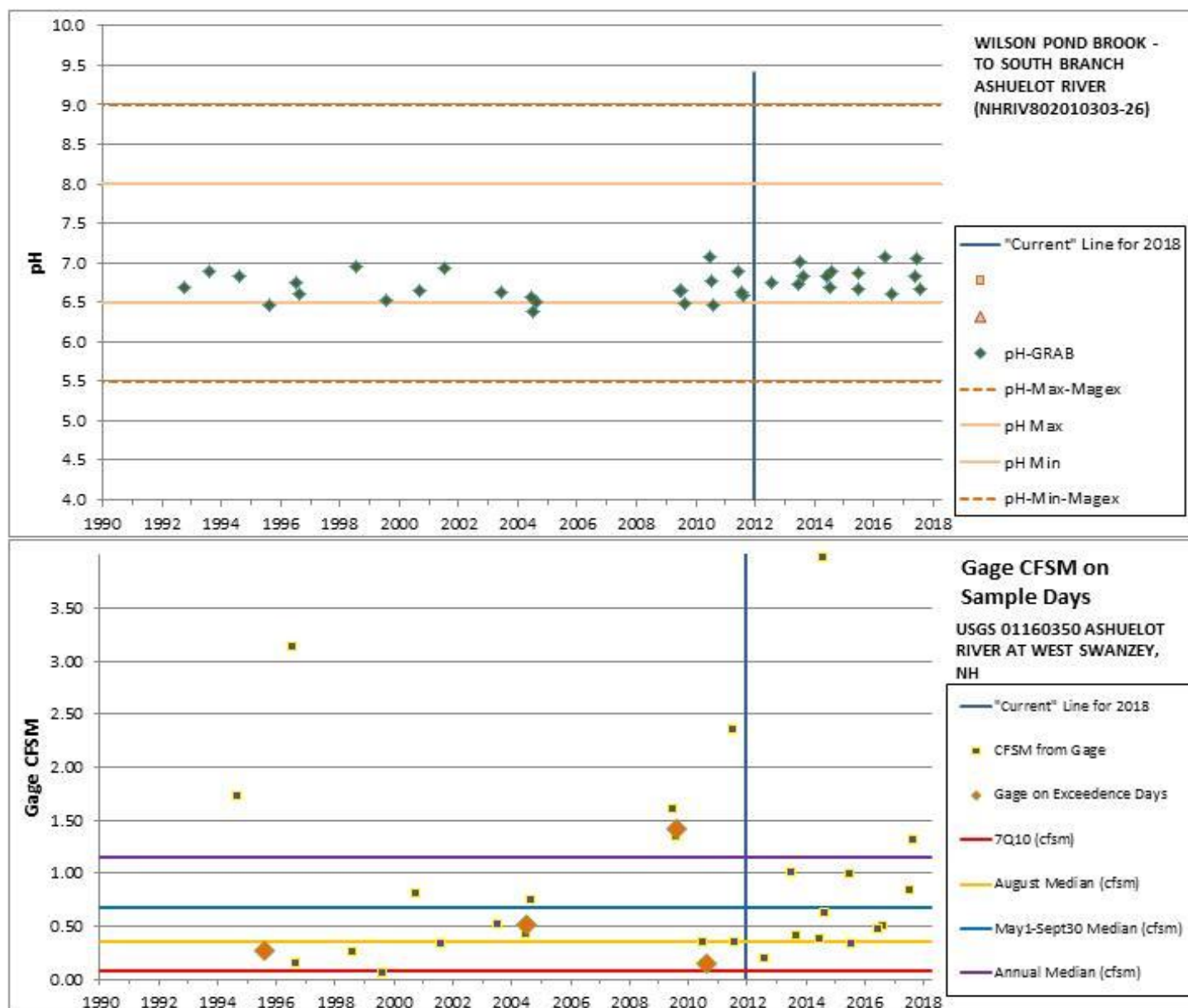
The Sugar River was originally impaired for pH for the aquatic life integrity designated use in 2006 based on data collected at station SUNSUN610. In 2014 it was discovered that station SUNSUN610 was mistakenly tied to the Sugar River, but was actually located within Sunapee Lake (NHLAK801060402-05-01). All of the SUNSUN610 data was been transferred and Sunapee Lake (NHLAK801060402-05-01) is currently impaired (4A-M) for pH for the aquatic life integrity designated use. Because the basis for the original impairment in 2006 was based on data not within the waterbody, and there is no additional data available, NHDES has delisted the Sugar River for pH for the aquatic life integrity designated use. Because there is no other data in which to make an assessment, it has been placed in category 3-ND (no current data) for the 2018 cycle.

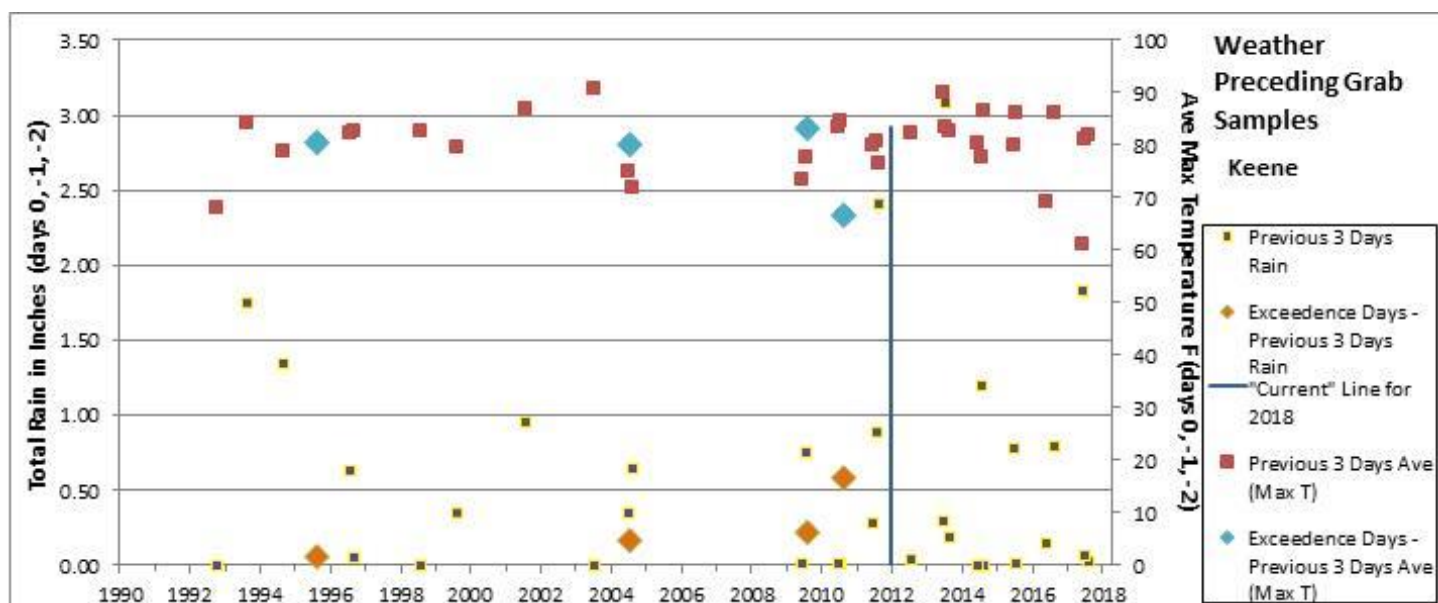
WILSON POND BROOK - TO SOUTH BRANCH ASHUELOT RIVER (NHRIV802010303-26)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town Listed First	2016	2018
WILSON POND BROOK - TO SOUTH BRANCH ASHUELOT RIVER	NHRIV802010303-26	pH	SWANZEY	5-M	2-M

The impairment was originally implemented during the 2010 assessment cycle using data collected at station WILSWAD. Since 1990, 4 of the 37 (10.8%) grab samples have had a pH value below 6.5 (6.38 – 6.48); however, 100% of samples taken during the current cycle (2012-2018) have had a pH value above 6.5 (6.58 – 7.08). Additionally, 3 out of the 4 low pH samples ranged from 6.46 – 6.48, which is very close to the 6.5 threshold. The low pH samples were collected at flows between 0.14- 1.41 CFSM on the Ashuelot River gage (01160350) and during varying weather conditions with 0.05- 0.57 inches preceding three-day precipitation. Newer data showing pH between 6.5 and 8.0 were taken during similar conditions and in greater numbers than the historical low pH values. The 2016 assessment cycle retained the 5-M designation and requested more data be collected in August. August samples were 6.60 and 6.66 in 2016 and 2017, respectively. The new additional data supports delisting Wilson Pond Brook. Wilson Pond Brook - To South Branch Ashuelot River (NHRIV802010303-26) has been moved from 5-M to 2-M for pH for the aquatic life integrity designated use based on data collected in the current assessment period.

Impairments Removed (i.e. Delisted) from the 2016 303(d) List of Threatened or Impaired Waters (i.e. Category 5)




Notes:

pH-GRAB = pH value from a grab sample.

"Magex" refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

"Current" Line for 2018 – Per the methodology outlined in the CALM, all data from this referenced data is considered "current" unless. Available older data is provided for context. See the 2016 CALM for additional details.

Macroinvertebrates for Aquatic Life Integrity

HEWES BROOK (NHRIV801040402-04)

Assessment Unit Name	Assessment Unit ID	Parameter Name	Town(s) - Primary Town	Listed First	2016	2018
Hewes Brook	NHRIV801040402-04	Benthic-Macroinvertebrate Bioassessments (Streams)	LYME, HANOVER		5-P	2-M

Three invertebrate samples have been collected (2003, 2010, and 2015). Hewes Brook (NHRIV801040402-04) was impaired for Benthic-Macroinvertebrate Bioassessments (Streams) in the 2012 cycle. The impairment was based on data collected in 2010. However, the AUID has multiple habitat types reflecting varying stream gradient. The 2010 sample was collected for a probability based survey from a low gradient portion of the stream. The NH-IBI is better suited for evaluating moderate to high gradient streams and rivers. The 2003 and 2015 samples were collected from sections of stream with higher gradients and is therefore a more appropriate application of the NH-IBI. Both the 2003 and 2015 samples had B-IBI ratios greater than 1.0 (1.09 and 1.19, respectively). B-IBI ratios (B-IBI Score/B-IBI Threshold) greater than 1.0 indicate the invertebrate community meets or exceeds the narrative aquatic life use water quality criteria. Hewes Brook (NHRIV801040402-04) has been delisted from 5-P to 2-M for Benthic-Macroinvertebrate Bioassessments (Streams) for the aquatic life integrity designated use based on data collected in the current assessment period.

Waterbody	Station ID	Activity ID	Collection Date	B-IBI Threshold	B-IBI Score	B-IBI_ratio
Hewes Brook	06-HEW	BEN-06-HEW-01	9/9/2015	58.05	69.11	1.19
Hewes Brook	09-HEW	BEN-FW08NH171-01	9/27/2010	58.05	38.52	0.66
Hewes Brook	01M-HEW	BEN03C-H26S5	9/2/2003	55.728	60.64	1.09